

CENTRAL UTAH PROJECT COMPLETION ACT

HEARING BEFORE THE SUBCOMMITTEE ON WATER AND POWER OF THE COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

SECOND SESSION

ON

S. 2969

TO INCREASE THE AMOUNTS AUTHORIZED TO BE APPROPRIATED FOR
THE CENTRAL UTAH PROJECT, AND FOR OTHER PURPOSES

SEPTEMBER 18, 1990



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CENTRAL UTAH PROJECT COMPLETION ACT

TUESDAY, SEPTEMBER 18, 1990

U.S. SENATE,
SUBCOMMITTEE ON WATER AND POWER,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The subcommittee met, pursuant to notice, at 9 a.m., in room SD-366, Dirksen Senate Office Building, Hon. Bill Bradley, presiding.

OPENING STATEMENT OF HON. BILL BRADLEY, U.S. SENATOR FROM NEW JERSEY

Senator BRADLEY. The subcommittee will come to order.

The Subcommittee on Water and Power will consider today S. 2969, a bill introduced by Senators Garn and Hatch, which is intended to provide for the completion of the Central Utah Project, address a multitude of environmental matters associated with construction and operation of that project, and resolve certain obligations toward the Ute Indian Tribe.

The subcommittee welcomes our witnesses, particularly those who have traveled to Washington from Utah. Within the time constraints of this hearing, we hope to offer each of you a fair opportunity to advise us on this bill.

To my mind, your testimony would be most helpful if you focus on three central questions. First, does this complex piece of legislation authorize economically sound water supply measures? Second, are the environmental mitigation and enhancement activities authorized by the bill adequate, sensible, and secure in the long term? And, third, does this bill provide for full and fair compensation for the Ute Indian Tribe?

My concern about the project stems from the same source that seems to have generated this bill's innovative proposal to permit the Central Utah Water Conservancy District to build the remaining features of the irrigation and drainage system. To put it simply, the Bureau of Reclamation has completely failed to persuade me and I think others that it is willing or able to build this project in a fashion that protects the Federal taxpayer, the environment, or the project's intended beneficiaries. The Commissioner is going to testify, and when he does, I hope that he will be able to explain this pathetic state of affairs.

In addition, over the past several years, I have been told often how strongly the farmers and other residents of central Utah feel about the Bonneville Unit's irrigation and drainage system. They were promised it, and they want it. That view is understandable,

and I accept it as a fact of life for those citizens and those who represent them.

What I have never been shown with clarity is whether there is a better match between Utah's needs and the Nation's resources. Is the irrigation and drainage system the sole or best means of serving the region's needs, or is it merely a proposal from an earlier generation that through repetition has taken on a character of prophecy? Now, there are answers to these questions.

S. 2969, to be very sure, is a much better bill than others that have come before this subcommittee involving the CUP. I offer my compliments to the Utah delegation and to many others who were involved in its preparation. It is obviously the result of a lot of hard work. It is clear that you worked hard and with open minds, but the real question is whether better is good enough. I will reserve my judgment on that question until I hear the witnesses' testimony today and have an opportunity to consider that testimony carefully.

[The text of S. 2969 follows:]

101ST CONGRESS
2D SESSION

S. 2969

To increase the amounts authorized to be appropriated for the Central Utah Project, and for other purposes.

IN THE SENATE OF THE UNITED STATES

AUGUST 3 (legislative day, JULY 10), 1990

Mr. GARN (for himself and Mr. HATCH) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

A BILL

To increase the amounts authorized to be appropriated for the Central Utah Project, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 SECTION 1. SHORT TITLE AND TABLE OF CONTENTS.

4 (a) SHORT TITLE.—Titles I through IV of this Act may
5 be cited as the “Central Utah Project Completion Act”.

6 (b) TABLE OF CONTENTS.—The table of contents for
7 titles I through IV of this Act is as follows:

Sec. 1. Short title and table of contents.

Sec. 2. Definitions.

TITLE I—CENTRAL UTAH PROJECT CONSTRUCTION

Sec. 101. Authorization of additional amounts for the Colorado River Storage Project.

Sec. 102. Bonneville Unit water development.

- Sec. 103. Uinta Basin water projects.
- Sec. 104. Non-Federal contribution.
- Sec. 105. Definite Plan Report and environmental compliance.
- Sec. 106. Local development in lieu of irrigation and drainage.
- Sec. 107. Water management improvement.
- Sec. 108. Limitation on hydropower operations.
- Sec. 109. Operating agreements.
- Sec. 110. Jordan Aqueduct prepayment.
- Sec. 111. Agreement by district to provisions of this Act.
- Sec. 112. Audit of Central Utah Project cost allocations.
- Sec. 113. Excess crops.

TITLE II—FISH, WILDLIFE, AND RECREATION MITIGATION AND CONSERVATION

- Sec. 201. Utah Reclamation Mitigation and Conservation Commission.
- Sec. 202. Increased Central Utah Project water capability.
- Sec. 203. Central Utah Project stream flows.
- Sec. 204. Fish, wildlife, and recreation projects identified or proposed in the 1988 Definite Plan Report for the Central Utah Project.
- Sec. 205. Wildlife lands and improvements.
- Sec. 206. Wetlands acquisition, rehabilitation, and enhancement.
- Sec. 207. Fisheries acquisition, rehabilitation, and enhancement.
- Sec. 208. Stabilization of high mountain lakes in the Uinta mountains.
- Sec. 209. Stream access and riparian habitat development.
- Sec. 210. Section 8 expenses.
- Sec. 211. Jordan and Provo River Parkways and natural areas.
- Sec. 212. Recreation.
- Sec. 213. Fish and wildlife features in the Colorado River Storage Project.
- Sec. 214. Concurrent mitigation appropriations.
- Sec. 215. Fish, wildlife, and recreation mitigation schedule.

TITLE III—UTAH RECLAMATION MITIGATION AND CONSERVATION ACCOUNT

- Sec. 301. Findings, purpose, operation and administration.
- Sec. 302. Utah Reclamation Mitigation and Conservation Account.

TITLE IV—UTE INDIAN RIGHTS SETTLEMENT

- Sec. 401. Findings and purpose.
- Sec. 402. Provision for payment to the Ute Indian Tribe.
- Sec. 403. Tribal use of water.
- Sec. 404. Tribal farming operations.
- Sec. 405. Reservoir, stream, habitat, and road improvements with respect to the Ute Indian Reservation.
- Sec. 406. Tribal development funds.
- Sec. 407. Waiver of claims.

1 SEC. 2. DEFINITIONS.

- 2 For the purposes of this Act: (1) The term "Bureau"
- 3 means the Bureau of Reclamation of the Department of
- 4 Interior.

1 (2) The term "Commission" means the Utah Reclama-
2 tion Mitigation and Conservation Commission established by
3 section 201 of this Act.

4 (3) The term "conservation measure(s)" means actions
5 taken and/or projects to improve the efficiency of the stor-
6 age, conveyance, distribution, and use of water, exclusive of
7 dams, reservoirs, or wells.

8 (4) The term "1988 Definite Plan Report" means the
9 May 1988 Draft Supplement to the Definite Plan Report for
10 the Bonneville Unit of the Central Utah Project.

11 (5) The term "District" means the Central Utah Water
12 Conservancy District.

13 (6) The term "Interagency Biological Assessment
14 Team" means the team comprised of representatives from
15 the United States Fish and Wildlife Service, the Forest Serv-
16 ice, the Bureau of Reclamation, the Utah Division of Wildlife
17 Resources, and the District.

18 (7) The term "petitioner(s)" means any person or entity
19 that petitions the District for an allotment of water pursuant
20 to the Utah Water Conservancy Act (Utah Code Ann. Sec.
21 17A-2-1401 et seq.).

22 (8) The term "project" means the Central Utah Project.

23 (9) The term "public involvement" means to request
24 comments on the scope of and, subsequently, on drafts of
25 proposed actions or plans, affirmatively soliciting comments,

1 in writing or at public hearings, from those persons, agencies,
2 or organizations who may be interested or affected.

3 (10) The term "Secretary" means the Secretary of the
4 Interior.

5 (11) The term "Section 8" means section 8 of the Act of
6 April 11, 1956 (70 Stat. 110; 43 U.S.C. 620g).

7 (12) The term "State" means the State of Utah, its po-
8 litical subdivisions, or its designee.

9 (13) The term "Stream Flow Agreement" means the
10 agreement entered into by the United States through the
11 Secretary of the Interior, the State of Utah, and the Central
12 Utah Water Conservancy District, dated February 27, 1980,
13 as modified by the amendment to such agreement, dated
14 , 1990. Concurring parties to the agreement are
15 the Utah Department of Natural Resources, Utah Division of
16 Water Resources, Utah Division of Wildlife Resources, the
17 United States Fish and Wildlife Service, and the USDA
18 Forest Service.

19 (14) The terms "Uintah Ute Indian Tribe", "Ute Indian
20 Tribe", or "the Tribe" means the Ute Indian Tribe of the
21 Uintah and Ouray Indian Reservation, and shall include,
22 without limitation, the "Full-blood" and "Mixed-blood"
23 members of the Tribe, as defined in the Act of August 24,
24 1954 (25 U.S.C. 677-677aa).

1 TITLE I—CENTRAL UTAH PROJECT

2 CONSTRUCTION

3 SEC. 101. AUTHORIZATION OF ADDITIONAL AMOUNTS FOR

4 THE COLORADO RIVER STORAGE PROJECT.

5 (a)(1) INCREASE IN CRSP AUTHORIZATION.—In order
6 to provide for the completion of the Central Utah Project and
7 other features described in this Act, the amount which sec-
8 tion 12 of the Act of April 11, 1956 (70 Stat. 110; 43 U.S.C.
9 620k), authorizes to be appropriated, which was increased by
10 the Act of August 10, 1972 (86 Stat. 525; 43 U.S.C. 620k
11 note), and the Act of October 31, 1988 (102 Stat. 2826), is
12 hereby further increased by \$679,853,537 plus or minus such
13 amounts, if any, as may be required by reason of changes in
14 construction costs as indicated by engineering cost indexes
15 applicable to the type of construction involved. This addition-
16 al sum shall be available solely for design, engineering, and
17 construction of the Central Utah Project and features identi-
18 fied in this Act and for the planning and implementation of
19 the fish and wildlife and recreation mitigation and conserva-
20 tion projects and studies authorized in this Act.

21 (2) APPLICATION OF INSPECTOR GENERAL RECOM-
22 MENDATIONS.—Notwithstanding any other provision of law
23 to the contrary, the Secretary shall implement all the recom-
24 mendations contained in the report entitled "Review of the
25 Financial Management of the Colorado River Storage

1 Project, Bureau of Reclamation (Report Number 88-45,
2 February, 1988)", prepared by the Inspector General of the
3 Department of the Interior, with respect to the funds author-
4 ized to be appropriated in this section.

5 (b) UTAH RECLAMATION PROJECTS AND FEATURES
6 NOT TO BE FUNDED AND AUTHORIZATIONS REPEALED.—
7 Notwithstanding the Act of April 11, 1956 (70 Stat. 110; 43
8 U.S.C. 105), the Act of August 10, 1972 (86 Stat. 525; 43
9 U.S.C. 620k note), the Act of October 19, 1980 (94 Stat.
10 2239; 43 U.S.C. 620), and the Act of October 31, 1988 (102
11 Stat. 2826), funds made available under this Act may not be
12 made available, obligated, or expended for the following Utah
13 reclamation projects and features:

14 (1) Fish and wildlife features:

15 (A) The dam in Bjorkman Hollow;

16 (B) The Deep Creek pumping plant;

17 (C) The North Fork pumping plant;

18 (2) Water development projects and features:

19 (A) Mosida pumping plant, canals, and later-
20 als;

21 (B) Draining of Benjamin Slough;

22 (C) Diking of Goshen or Provo Bays in Utah

23 Lake;

24 (D) Ute Indian Unit;

25 (E) Leland Bench development;

1 (F) All features of the Central Utah Project
2 not proposed and described in the 1988 Definite
3 Plan Report.

4 Counties in which the projects and features described in this
5 subsection may participate in the local development projects
6 provided for in section 106.

7 (c) **TERMINATION OF AUTHORIZATION OF APPRO-**
8 **PRIATIONS.**—Notwithstanding any provision of the Act of
9 April 11, 1956 (70 Stat. 110; 43 U.S.C. 620k), the Act of
10 September 2, 1964 (78 Stat. 852), the Act of September 30,
11 1968 (82 Stat. 885), the Act of August 10, 1972 (86 Stat.
12 525; 43 U.S.C. 620k note), and the Act of October 31, 1988
13 (102 Stat. 2826), to the contrary, the authorization of appro-
14 priations for construction of any Colorado River Storage
15 Project participating project located in the State of Utah
16 shall terminate five years after the date of enactment of this
17 Act unless—

18 (1) the Secretary executes a cost-sharing agree-
19 ment with non-Federal entities for construction of such
20 project, and

21 (2) the Secretary has requested construction funds
22 for such project.

23 **SEC. 102. BONNEVILLE UNIT WATER DEVELOPMENT.**

24 (a) Of the amounts authorized to be appropriated in sec-
25 tion 101, the following amounts shall be available only for

1 the following features of the Bonneville Unit of the Central
2 Utah Project:

3 (1) IRRIGATION AND DRAINAGE SYSTEM.—(A)
4 \$150,000,000 for the construction of an enclosed pipe-
5 line primary water conveyance system from Spanish
6 Fork Canyon to Sevier Bridge Reservoir for the pur-
7 pose of supplying new and supplemental irrigation
8 water supplies to Utah, Juab, Millard, Sanpete, Sevier,
9 Garfield, and Piute Counties. Construction of the facili-
10 ties specified in the previous sentence shall be under-
11 taken by the District as specified in subparagraph (D)
12 of this paragraph. No funds are authorized to be appro-
13 priated by the Secretary or the Bureau for construction
14 of the facilities identified in this subparagraph.

15 (B) The authorization to construct the features
16 provided for in subparagraph (A) shall expire if no
17 funds to construct such features have been obligated or
18 expended by the Secretary in accordance with this Act
19 unless the Secretary determines the District has com-
20 plied with sections 102, 104, and 105 within five years
21 from the date of its enactment, or such longer time as
22 necessitated for—

23 (i) the conclusion of a consultation under sec-
24 tion 7 of the Endangered Species Act of 1973 (16
25 U.S.C. 1533) for any species that is or may be

1 listed as threatened or endangered under such
2 Act;

3 (ii) judicial review of a completed final envi-
4 ronmental impact statement for such features if
5 such review is initiated by parties other than the
6 District, the State, or wholesale water customers;
7 or

8 (iii) a judicial challenge of the Secretary's
9 failure to make a determination of compliance
10 under this subparagraph: *Provided, however, That*
11 *in the event that construction is not initiated on*
12 *the features provided for in subparagraph (A),*
13 *\$125,000,000 shall remain authorized pursuant to*
14 *the provisions of this Act applicable to subpara-*
15 *graph (A) for the construction of alternate fea-*
16 *tures to deliver irrigation water to lands in the*
17 *Utah Lake drainage area, exclusive of the fea-*
18 *tures identified in section 101(b).*

19 (C) REQUIREMENT FOR BINDING CONTRACTS.—
20 Amounts authorized to carry out subparagraph (A)
21 may not be obligated or expended, and may not be bor-
22 rowed against, until binding contracts for the purchase
23 for the purpose of agricultural irrigation of at least 90
24 per centum of the irrigation water to be delivered from

1 the features of the Central Utah Project described in
2 subparagraph (A) have been executed.

3 (D) In lieu of construction by the Secretary, the
4 Central Utah Project and features specified in section
5 102(a)(1) shall be constructed by the District under the
6 regulations authorized by Drainage Facilities and
7 Minor Construction Act (Act of June 13, 1956, 70
8 Stat. 274, 43 U.S.C. 505). Any such feature shall be
9 operated, maintained, and repaired by the District in
10 accordance with repayment contracts and operation
11 and maintenance agreements entered into between the
12 Secretary and the District.

13 (2) CONJUNCTIVE USE OF SURFACE AND GROUND
14 WATER.—\$10,000,000 for a feasibility study and de-
15 velopment, with public involvement, by the Utah Divi-
16 sion of Water Resources of systems to allow ground
17 water recharge, management, and the conjunctive use
18 of surface water resources with ground water resources
19 in Salt Lake, Utah, Davis and Weber Counties, Utah.

20 (3) WASATCH COUNTY SPRINKLER IRRIGA-
21 TION.—\$500,000 to conduct a feasibility study, with
22 public involvement, for the construction of facilities to
23 enclose, pressurize, and develop sprinkler irrigation
24 systems to facilitate the acquisition of Strawberry
25 Basin water rights authorized in section 203(b), and to

1 increase efficiency, enhance beneficial uses, and
2 achieve greater water conservation within Wasatch
3 County, to the extent practicable without interference
4 with downstream rights.

5 (4) UTAH LAKE SALINITY CONTROL.—
6 \$1,000,000 shall be available to the District to con-
7 duct, with public involvement, a feasibility study to
8 reduce the salinity of Utah Lake.

9 (5) STRAWBERRY-PROVO CONVEYANCE STUDY.—
10 (A) \$2,000,000 shall be available to the District to
11 conduct a feasibility study and environmental assess-
12 ment, with public involvement, of direct delivery of
13 Colorado River Basin water from the Strawberry Res-
14 ervoir or elsewhere in the Strawberry Collection
15 System to the Provo River Basin, including the Walls-
16 burg Tunnel and other possible importation or ex-
17 change options. They study shall also evaluate the po-
18 tential for changes in existing importation patterns and
19 quantities of water from the Weber and Duchesne
20 River Basins, and shall describe the economic and en-
21 vironmental consequences of each alternative identified.

22 (B) The cost of the study provided for in subpara-
23 graph (A) shall be treated as an expense under section
24 8: *Provided, however,* That the cost of such study shall
25 be reallocated proportionate with project purposes in

1 the event any conveyance alternative is subsequently
2 authorized and constructed.

3 (6) COMPLETION OF DIAMOND FORK SYSTEM.—

4 (A) Of the amounts authorized to be appropriated
5 under section 101, \$69,000,000 shall be available to
6 complete construction of the Diamond Fork System.

7 (B) In lieu of construction by the Secretary, the
8 Central Utah Project and features specified in para-
9 graph (A) shall be constructed by the District under
10 the Drainage Facilities and Minor Construction regula-
11 tions authorized pursuant to section 505, title 43,
12 United States Code 505. Any such feature shall be op-
13 erated, maintained, and repaired by the District in ac-
14 cordance with repayment contracts and operation and
15 maintenance agreements entered into between the Sec-
16 retary and the District.

17 SEC. 103. UINTA BASIN REPLACEMENT PROJECT.

18 (a) IN GENERAL.—Of the amounts authorized to be ap-
19 propriated by section 101, \$30,537,537 shall be available
20 only to increase efficiency, enhance beneficial uses, and
21 achieve greater water conservation within the Uinta Basin,
22 as follows:

23 (1) \$13,581,443 for the construction of the Pigeon
24 Water Reservoir, together with an enclosed pipeline
25 conveyance system to divert water from Lake Fork

1 River to Pigeon Water Reservoir and Sandwash Res-
2 ervoir.

3 (2) \$2,986,964 for the construction of McGuire
4 Draw Reservoir.

5 (3) \$7,669,166 for the construction of Clay Basin
6 Reservoir.

7 (4) \$4,000,000 for the rehabilitation of Farns-
8 worth Canal.

9 (5) \$2,300,000 for the construction of permanent
10 diversion facilities on the Duchesne River, the designs
11 of which shall be approved by the Federal and State
12 fish and wildlife agencies. Such amount shall be treated
13 as an expense under section 8.

14 (b) EXPIRATION OF AUTHORIZATION.—The authoriza-
15 tion to construct any of the features provided for in para-
16 graphs (1) through (5) of subsection (a)—

17 (1) shall expire if no funds for such features have
18 been obligated or expended in accordance with this Act
19 within five years from the date of completion of feasi-
20 bility studies, or such longer time as necessitated for—

21 (i) the conclusion of a consultation under sec-
22 tion 4 of the Endangered Species Act of 1973 (16
23 U.S.C. 1533) for any species that is or may be
24 listed as threatened or endangered under such
25 Act; or

1 (ii) judicial review of a completed Final En-
2 vironmental Impact Statement if such review was
3 initiated by parties other than the District, the
4 State, or wholesale water customers;

5 (2) shall expire if the Secretary determines that
6 any such feature is not feasible.

7 (c) REQUIREMENT FOR BINDING CONTRACTS.—

8 Amounts authorized to carry out subsection (a), paragraphs
9 (1) through (5) may not be obligated or expended, and may
10 not be borrowed against, until binding contracts for the pur-
11 chase of at least 90 per centum of the irrigation water to be
12 delivered from the features of the Central Utah Project de-
13 scribed in subsection (a), paragraphs (1) through (5) have
14 been executed.

15 (d) NON-FEDERAL OPTION.—In lieu of construction by
16 the Secretary, the features described in subsection (a), para-
17 graphs (1) through (5) may, at the option of the District, or
18 any other organization representing the water users served
19 by such features, be constructed by the District or such other
20 organization under the Drainage Facilities and Minor Con-
21 struction program authorized pursuant to section 505, title,
22 43, United States Code.

23 (e) WATER RIGHTS.—To make water rights available
24 for any of the features constructed as authorized in this sec-
25 tion, the Bureau shall convey to the District the water rights

1 evidenced by Water Right Number 43-3825 (Application
2 Number A36642) and Water Right Number 43-3827 (Appli-
3 cation Number A36644).

4 (f) FEASIBILITY ANALYSIS AND ENVIRONMENTAL
5 COMPLIANCE.—(1) Except for amounts required for compli-
6 ance with applicable environmental laws and the purposes of
7 this paragraph, amounts may not be obligated or expended
8 until the Secretary completes an analysis to determine the
9 feasibility of the separate features described in subsection (a),
10 paragraphs (1) through (5).

11 (2) Federal funds may not be provided to any non-Fed-
12 eral interests until any such interest enters into binding
13 agreements with the appropriate Federal authority to comply
14 with this Act and all Federal fish, wildlife, recreation, and
15 environmental laws with respect to the use of such funds.

16 (g) UINTAH INDIAN IRRIGATION PROJECT.—(1) Not-
17 withstanding any other provision of law, the Secretary is au-
18 thorized and directed to enter into a contract or cooperative
19 agreement with, or make a grant to the Uintah Indian Irriga-
20 tion Project Operation and Maintenance Company, or any
21 other organization representing the water users within the
22 Uintah Indian Irrigation Project area, to enable such organi-
23 zation to—

24 (A) administer the Uintah Indian Irrigation
25 Project, or part thereof, and

1 (B) operate, maintain, rehabilitate, and construct
2 all or some of the irrigation project facilities using the
3 same administrative authority and maintenance proce-
4 dures as used by water user organizations formed
5 under State laws who administer, operate, and main-
6 tain irrigation projects.

7 (2) Title to Uintah Indian Irrigation Project rights-of-
8 way and facilities shall remain in the United States in trust
9 for the benefit of the land owners. The Secretary shall retain
10 any trust responsibilities to the Uintah Indian Irrigation
11 Project.

12 (3) The Secretary shall use funds received from assess-
13 ments, carriage agreements, leases, and all other additional
14 sources related to the Uintah Indian Irrigation Project exclu-
15 sively for Uintah Indian Irrigation Project administration, op-
16 eration, maintenance, rehabilitation, and construction where
17 appropriate. Upon receipt, the Secretary shall deposit such
18 funds in an account in the Treasury of the United States.
19 Amounts in the account not currently needed shall earn inter-
20 est at the rate determined by the Secretary of the Treasury,
21 taking into consideration current market yields on outstand-
22 ing obligations of the United States with remaining periods to
23 maturity comparable to the period for which such funds are
24 not currently needed. Amounts in the account shall be avail-
25 able without further authorization or appropriation by Con-

1 gress. Such amounts shall be treated as private funds to be
2 held in trust for landowners of the irrigation project and shall
3 not be treated as public or appropriated funds.

4 (4) All noncontract costs, direct and indirect, required to
5 administer the Uintah Indian Irrigation Project shall be non-
6 reimbursable and paid for by the Secretary as part of his trust
7 responsibilities, beginning on the date of enactment of this
8 Act. Such costs shall include (but not be limited to) the non-
9 contract cost positions of project manager or engineer and
10 two support staff. Such costs shall be added to the funding of
11 the Uintah and Ouray Agency of the Bureau of Indian Affairs
12 as a line item.

13 (5) The Secretary is authorized to sell, lease, or other-
14 wise make available the use of irrigation project equipment to
15 a water user organization which is under obligation to the
16 Secretary to administer, operate, and maintain the Uintah
17 Indian Irrigation Project or part thereof:

18 (6) The Secretary is authorized to lease or otherwise
19 make available the use of irrigation project facilities to a
20 water user organization which is under obligation to the Sec-
21 retary to administer, operate, and maintain the Uintah Indian
22 Irrigation Project or part thereof:

23 (h) BRUSH CREEK AND JENSEN UNIT.—(1) The Secre-
24 tary is authorized to enter into Amendatory Contract
25 Number 6-05-01-00143, as last revised on September 18,

1 1988, between the United States and the Uintah Water Con-
2 servancy District, which provides, among other things, for
3 part of the municipal and industrial water obligation now the
4 responsibility of the Uintah Water Conservancy District to be
5 retained by the United States with a corresponding part of
6 the water supply to be controlled and marketed by the United
7 States. Such water shall be marketed and used in conform-
8 ance with State law.

9 (2) The Secretary, through the Bureau, shall—

10 (A) establish a conservation pool of four thousand
11 acre-feet in Red Fleet Reservoir for the purpose of en-
12 hancing associated fishery and recreational opportuni-
13 ties and for such other purposes as may be recom-
14 mended by the Commission in consultation with the
15 Utah Division of Wildlife Resources and the Utah Di-
16 vision of Parks and Recreation; and

17 (B) enter into an agreement with the Utah Divi-
18 sion of Parks and Recreation for the management and
19 operation of Red Fleet recreational facilities.

20 **SEC. 104. NON-FEDERAL CONTRIBUTION.**

21 The non-Federal share of the cost for the design, engi-
22 neering, and construction of the Central Utah Project fea-
23 tures authorized by sections 102 shall be 35 per centum of
24 the total costs and shall be paid concurrently with the Feder-
25 al share, except that for the facilities specified in 102(a)(6),

1 the cost-share shall be 35 per centum of the costs allocated to
2 irrigation beyond the ability of irrigators to repay. The non-
3 Federal share of the cost for studies required by sections 102,
4 other than the study required by sections 102(a)(5), shall be
5 50 per centum and shall be paid concurrently with the Feder-
6 al share. Any feature or study to which this section applies
7 shall not be initiated until after the non-Federal interests
8 enter into binding agreements with the appropriate Federal
9 authority to provide the share required by this section.

10 **SEC. 105. DEFINITE PLAN REPORT AND ENVIRONMENTAL**
11 **COMPLIANCE.**

12 (a) **DEFINITE PLAN REPORT.**—Except for amounts re-
13 quired for compliance with applicable environmental laws and
14 the purposes of this subsection, amounts may not be obligated
15 or expended for the irrigation and drainage system authorized
16 in section 102(a)(1) until—

17 (1) the Secretary or the District, at the option of
18 the District, completes a Definite Plan Report for such
19 systems; and

20 (2) a final environmental impact statement regard-
21 ing such system has been approved pursuant to the
22 National Environmental Policy Act of 1969.

23 (b) **COMPLIANCE WITH ENVIRONMENTAL LAWS.**—
24 Federal funds may not be provided to any non-Federal inter-
25 ests until any such interest enters into binding agreements

1 with the appropriate Federal authority to comply with this
2 Act and all Federal fish, wildlife, recreation, and environ-
3 mental laws with respect to the use of such funds.

4 (c) INITIATION OF REPAYMENT.—For purposes of re-
5 payment of costs obligated and expended prior to the date of
6 enactment of this Act, the Definite Plan Report shall be con-
7 sidered as being filed and approved by the Secretary, and
8 repayment of such costs shall be initiated by the Secretary of
9 Energy at the earliest possible date. All the costs allocated to
10 irrigation and associated with construction of the Strawberry
11 Collection System, a component of the Bonneville Unit, obli-
12 gated prior to the date of enactment of this Act shall be in-
13 cluded by the Secretary of Energy in the costs specified in
14 this subsection.

15 SEC. 106. LOCAL DEVELOPMENT IN LIEU OF IRRIGATION AND
16 DRAINAGE.

17 (a) OPTIONAL REBATE TO COUNTIES.—(1) After two
18 years from the date of enactment of this Act, the District
19 shall, at the option of an eligible county as provided in para-
20 graph (2), rebate to such county all of the ad valorem tax
21 contributions paid by such county to the District, with inter-
22 est but less the value of any benefits received by such county
23 and less the administrative expenses incurred by the District
24 to that date.

1 (2) Counties eligible to receive the rebate provided for in
2 paragraph (1) include any county within the District, except
3 for Salt Lake County and Utah County, in which the con-
4 struction of Central Utah Project water storage or delivery
5 features authorized in this Act has not commenced and—

6 (A) in which there are no binding contracts as re-
7 quired under section 102(1)(C); or

8 (B) in which the authorization for the project or
9 feature was repealed pursuant to section 101(b) or ex-
10 pired pursuant to section 102(1)(B) of this Act.

11 (b) LOCAL DEVELOPMENT OPTION.—(1) Upon the re-
12 quest of any eligible county that elects not to participate in
13 the project as provided in subsection (a), the Secretary shall
14 provide as a grant to such county an amount that, when
15 matched with the rebate received by such county, shall con-
16 stitute 65 per centum of the cost of implementation of meas-
17 ures identified in paragraph (2).

18 (2)(A) The grant provided for in this subsection shall be
19 available for the following purposes:

20 (i) Potable water distribution and treatment.

21 (ii) Wastewater collection and treatment.

22 (iii) Agricultural water management.

23 (iv) Other public infrastructure improvements as
24 may be approved by the Secretary.

1 (B) Funds made available under this subsection may not
2 be used for—

3 (i) draining of wetlands;

4 (ii) dredging of natural water courses;

5 (iii) planning or constructing water impoundments
6 of greater than five thousand acre-feet, except for the
7 proposed Hatch Town Dam on the Sevier River in
8 southern Garfield County, Utah.

9 (C) All Federal environmental laws shall be applicable
10 to any projects or features developed pursuant to this section.

11 (3) Of the amounts authorized to be appropriated by sec-
12 tion 101, not more than \$40,000,000 may be available for
13 the purposes of this subsection.

14 SEC. 107. WATER MANAGEMENT IMPROVEMENT.

15 (a) PURPOSES.—The purposes of this section are,
16 through such means as are cost-effective and environmentally
17 sound, to—

18 (1) encourage the conservation and wise use of
19 water;

20 (2) reduce the probability and duration of periods
21 necessitating extraordinary curtailment of water use;

22 (3) achieve beneficial reductions in water use and
23 system costs;

24 (4) prevent or eliminate unnecessary depletion of
25 waters in order to assist in the improvement and main-

1 tenance of water quantity, quality, and streamflow con-
2 ditions necessary to augment water supplies and sup-
3 port fish, wildlife, recreation, and other public benefits;

4 (5) provide a systematic approach to the accom-
5 plishment of these purposes and an objective basis for
6 measuring their achievement; and

7 (6) maximize the efficient use of Bonneville Unit
8 water prior to any importation of Bear River water
9 into Salt Lake County, Utah.

10 (b) WATER MANAGEMENT IMPROVEMENT PLAN.—

11 The District, after consultation with the State and with each
12 petitioner of project water, shall prepare and maintain a
13 water management improvement plan. The first plan shall be
14 submitted to the Secretary by January 1, 1994. Every three
15 years thereafter the District shall prepare and submit a sup-
16 plement to this plan. The Secretary shall either approve or
17 disapprove such plan or supplement thereto within six
18 months of its submission.

19 (1) ELEMENTS.—The plan shall include the fol-
20 lowing elements:

21 (A) A water conservation goal, consisting of
22 the greater of the following two amounts for each
23 petitioner of project water:

24 (i) 25 per centum of each petitioner's
25 projected increase in annual water deliveries

1 between the years 1990 and 2000, or such
2 later ten-year period as the District may find
3 useful for planning purposes; or

4 (ii) the amount by which unaccounted
5 for water or, in the case of irrigation entities,
6 transport losses, exceeds 10 per centum of
7 recorded annual water deliveries.

8 In no case shall the goal for the District be less
9 than twenty-five thousand acre-feet per year.

10 (B) A water management improvement in-
11 ventory, containing—

12 (i) conservation measures to improve
13 the efficiency of the storage, conveyance, dis-
14 tribution, and use of water in a manner that
15 contributes to the accomplishment of the pur-
16 poses of this section, exclusive of any meas-
17 ures promulgated pursuant to subsection
18 (f)(2)(A) through (D);

19 (ii) the estimated economic and financial
20 costs of each such measure;

21 (iii) the estimated water yield of each
22 such measure; and,

23 (iv) the socioeconomic and environmen-
24 tal effects of each such measure.

1 (C) A comparative analysis of each cost-effective and environmentally sound measure.

2 (D) A schedule of implementation for the following five years.

3 (E) An assessment of the performance of previously implemented conservation measures, if
4 any. Not less than ninety days prior to its transmittal to the Secretary, the plan, together with all
5 supporting documentation demonstrating compliance with this section, shall be made available by
6 the District for public review, hearing, and comment. All significant comments, and the District's
7 response thereto, shall accompany the plan transmitted to the Secretary.

8 (2) EVALUATION OF CONSERVATION MEASURES.—

9 (A) Any conservation measure proposed to the District by the Executive Director of the
10 Utah Department of Natural Resources shall be added to the water management improvement inventory and evaluated by the District. Any conservation measure, up to a cumulative five in
11 number within any three-year period, submitted by nonprofit sportsmen or environmental organizations shall be added to the water management im-

1 provement inventory and evaluated by the Dis-
2 trict.

3 (B) Each conservation measure that is found
4 to be cost-effective, without significant adverse
5 impact to the financial integrity of the District or
6 a petitioner of project water or without significant
7 adverse environmental impact, and in the public
8 interest shall be deemed to constitute the "active
9 inventory". For purposes of this section, the de-
10 termination of benefits shall take into account:

11 (i) the value of saved water, to be de-
12 termined, in the case of municipal water, on
13 the basis of the project municipal and indus-
14 trial repayment obligation of the District, but
15 in no case less than \$200 per acre foot, and,
16 in the case of irrigation water, on the basis
17 of operation, maintenance, and replacement
18 costs plus the "full cost" rate for irrigation
19 computed in accordance with section 202(3)
20 of the Reclamation Reform Act of 1982 (96
21 Stat. 1263; 43 U.S.C. 390bb), but in no case
22 less than \$50 per acre foot;

23 (ii) the reduced cost of wastewater
24 treatment, if any;

1 (iii) net additional hydroelectric power
2 generation, if any, valued at avoided cost;

3 (iv) net savings in operation, maintenance,
4 and replacement costs; and

5 (v) net savings in on-farm costs.

6 (3) IMPLEMENTATION.—The District, and each
7 petitioner of project water, as appropriate, shall implement and maintain, consistent with State law, conservation measures placed in the active inventory to the
8 maximum practical extent necessary to achieve 50 per
9 centum of the water conservation goal within seven
10 years after submission of the initial plan and 100 per
11 centum of the water conservation goal within fifteen
12 years after submission of the initial plan. Priority shall
13 be given to implementation of the most cost-effective
14 measures that are—
15
16

17 (A) found to reduce consumptive use of
18 water without significant adverse impact to the financial integrity of the District or the petitioner
19 of project water;
20

21 (B) without significant adverse environmental
22 impact; and

23 (C) found to be in the public interest.

24 (4) USE OF SAVED WATER.—All water saved by
25 any conservation measure implemented by the District

1 or a petitioner of project water under subsection (b)(3)
2 may be retained by the District or the petitioner of
3 project water which saved such water for its own use
4 or disposition. The specific amounts of water saved by
5 any conservation measure implemented under subsec-
6 tion (b)(3) shall be based upon the determination of
7 yield under paragraph (b)(1)(B)(iii), and as may be con-
8 firmed or modified by assessment pursuant to para-
9 graph (b)(1)(D). Each petitioner of project water may
10 make available to the District water in an amount
11 equivalent to the water saved, which the District may
12 make available to the Secretary for instream flows in
13 addition to the stream flow requirements established by
14 section 203. Such instream flows shall be released
15 from project facilities, subject to space available in
16 project conveyance systems, to at least one water-
17 course in the Bonneville and Uinta River Basins, re-
18 spectively, to be designated by the Interagency Biolog-
19 ical Assessment Team. Such flows shall be protected
20 against appropriation in the same manner as the mini-
21 mum streamflow requirements established by section
22 203. The Secretary shall reduce the annual contractual
23 repayment obligation of the District equal to the
24 project rate for delivered water, including operation
25 and maintenance expenses, for water saved and accept-

1 ed by the Secretary for instream flows pursuant to this
2 section. The District shall credit or rebate to each peti-
3 tioner of project water its proportionate share of the
4 District's repayment savings for reductions in deliveries
5 of project water as a result of this section.

6 (5) STATUS REPORT ON THE PLANNING PROC-
7 ESS.—Prior to January 1, 1992, the District shall es-
8 tablish a continuous process for the identification, eval-
9 uation, and implementation of water conservation
10 measures to achieve the purposes of this section, and
11 submit a report thereon to the Secretary. The report
12 shall include a description of this process, including its
13 financial resources, technical support, public involve-
14 ment, and identification of staff responsible for its de-
15 velopment and implementation.

16 (c) WATER CONSERVATION PRICING STUDY.—

17 (1) Within three years from the date of enactment
18 of this Act, the District, after consultation with the
19 State and each petitioner of project water, shall pre-
20 pare and transmit to the Secretary a study of whole-
21 sale and retail pricing to encourage water conservation
22 as described in this subsection, together with its con-
23 clusions and recommendations.

24 (2) The purposes of this study are—

1 (A) to design and evaluate potential rate de-
2 signs and pricing policies for water supply and
3 wastewater treatment within the District
4 boundary;

5 (B) to estimate demand electricity for each of
6 the principal categories of end use of water within
7 the District boundary;

8 (C) to quantify monthly water savings esti-
9 mated to result from the various designs and poli-
10 cies to be evaluated; and

11 (D) to identify a water pricing system that
12 reflects the incremental scarcity value of water
13 and rewards effective water conservation pro-
14 grams.

15 (3) Pricing policies to be evaluated in the study
16 shall include but not be limited to the following, alone
17 and in combination—

18 (A) recovery of all costs, including a reasona-
19 ble return on investment, through water and
20 wastewater service charges;

21 (B) seasonal rate differentials;

22 (C) drought year surcharges;

23 (D) increasing block rate schedules;

24 (E) marginal cost pricing;

1 (F) rates accounting for differences in costs
2 based upon point of delivery; and

3 (G) rates based on the effect of phasing out
4 the collection of water ad valorem property taxes
5 by the District and the petitioners of project
6 water over a five-year and ten-year period.

7 (4) Not less than ninety days prior to its transmit-
8 tal to the Secretary, the study, together with the Dis-
9 trict's preliminary conclusions and recommendations
10 and all supporting documentation, shall be available for
11 public review and comment, including public hearings.
12 All significant comments, and the District's response
13 thereto, shall accompany the study transmitted to the
14 Secretary.

15 (5) Nothing in this subsection shall be deemed to
16 authorize the Secretary, or grant new authority to the
17 District or petitioners of project water, to require the
18 implementation of any policies or recommendations
19 contained in the study.

20 (d) STUDY OF COORDINATED OPERATIONS.—

21 (1) Within three years from the date of enactment
22 of this Act, the District, after consultation with the
23 State and each petitioner of project water, shall pre-
24 pare and transmit to the Secretary a study of the co-
25 ordinated operation of independent municipal and in-

1 dustrial and irrigation water systems, together with its
2 conclusions and recommendations. The District shall
3 evaluate cost-effective flexible operating procedures
4 that will—

5 (A) improve the availability and reliability of
6 water supply;

7 (B) coordinate the timing of reservoir re-
8 leases under existing water rights to improve in-
9 stream flows for fisheries, wildlife, recreation, and
10 other environmental values, if possible;

11 (C) assist in managing drought emergencies
12 by making more efficient use of facilities;

13 (D) encourage the maintenance of existing
14 wells and other facilities which may be placed on
15 stand-by status when water deliveries from the
16 project become available;

17 (E) allow for the development, protection,
18 and sustainable use of ground water resources in
19 the District boundary;

20 (F) not reduce the benefits that would be
21 generated in the absence of the joint operating
22 procedures; and

23 (G) integrate management of surface and
24 ground water supplies and storage capability.

1 The District may incorporate measures developed by
2 the study in the Water Management Improvement
3 Plan prepared under subsection (b).

4 (2) Not less than ninety days prior to its transmit-
5 tal to the Secretary, the study, together with the Dis-
6 trict's preliminary conclusions and recommendations all
7 all supporting documentation, shall be available for
8 public review and comment, including public hearings.
9 All significant comments, and the District's response
10 thereto, shall accompany the study transmitted to the
11 Secretary.

12 (3) Nothing in this subsection shall be deemed to
13 authorize the Secretary, or grant new authority to the
14 District or petitioners of project water, to require the
15 implementation of any operating procedures, conclu-
16 sions, or recommendations contained in the study.

17 (e) AUTHORIZATION OF APPROPRIATIONS.—

18 (1) For an amount not to exceed 50 per centum of
19 the cost of conducting the studies identified in subsec-
20 tions (c) and (d) and developing the plan identified in
21 subsection (b), \$3,000,000 shall be available from the
22 amount authorized to be appropriated by section 101,
23 and shall remain available until expended. Such Feder-
24 al share shall be allocated among project purposes in
25 the same proportions as the joint costs of the Straw-

1 berry Collection System, and shall be repaid in the
2 manner of repayment for each such purpose.

3 (2) For an amount not to exceed 65 per centum of
4 the cost of implementation of the conservation meas-
5 ures in accordance with subsection (b), \$40,000,000
6 shall be available from the amount authorized to be ap-
7 propriated in section 101, and shall remain available
8 until expended. Such Federal share shall be allocated
9 between the purposes of municipal and industrial water
10 supply and irrigation, as appropriate, and shall be
11 repaid in the manner of repayment for each such pur-
12 pose.

13 (f) UTAH WATER CONSERVATION ADVISORY
14 BOARD.—

15 (1) Prior to March 31, 1991, the Governor of the
16 State may establish a board consisting of nine members
17 to be known as the Utah Water Conservation Advisory
18 Board. In the event that the Governor does not estab-
19 lish said board by such date, the Secretary shall estab-
20 lish a Utah Water Conservation Advisory Board con-
21 sisting of nine members appointed by the Secretary
22 from a list of names supplied by the Governor.

23 (2) The Board shall recommend water conserva-
24 tion standards and regulations for promulgation by
25 State or local authorities in the service area of each

1 petitioner of project water, including but not limited to
2 the following:

3 (A) metering or measuring of water to all
4 customers, to be accomplished within five years.
5 (For purposes of this paragraph, residential build-
6 ings of more than four units may be considered as
7 single customers.)

8 (B) elimination of declining block rate sched-
9 ules from any system of water or wastewater
10 treatment charges;

11 (C) a program of leak detection and repair
12 that provides for the inspection of all conveyance
13 and distribution mains, and the performance of re-
14 pairs, at intervals of three years or less;

15 (D) low consumption performance standards
16 applicable to the sale and installation of plumbing
17 fixtures and fittings in new construction;

18 (E) requirements for the recycling and reuse
19 of water by all newly constructed commercial
20 laundries and vehicle wash facilities;

21 (F) requirements for soil preparation prior to
22 the installation or seeding of turf grass in new
23 residential and commercial construction;

24 (G) requirements for the insulation of hot
25 water pipes in all new construction; and

1 (H) requirements for the installation of water
2 recycling or reuse systems on any newly installed
3 commercial and industrial water-operative air-con-
4 ditioning and refrigeration systems.

5 (3) Any water conserved by implementation of
6 subparagraph (A), (B), (C), or (D) shall not be credited
7 to the conservation goal specified under subparagraph
8 (b)(1)(A). All other water conserved shall be credited to
9 the conservation goal specified under subparagraph
10 (b)(1)(A).

11 (4) The Governor may waive the applicability of
12 paragraphs (2)(D) through (2)(H) above to any petition-
13 er of project water that provides water entirely for irri-
14 gation use.

15 (5) Prior to January 1, 1992, the board shall
16 transmit to the Secretary the assurance that the rec-
17 ommended standards and regulations referred to in sub-
18 paragraph (f)(2) will be substantially complete by Janu-
19 ary 1, 1993, and the failure of the board to do so shall
20 be deemed substantial noncompliance.

21 (6) Nothing in this subsection shall be deemed to
22 authorize the Secretary, or grant new authority to the
23 District or petitioners or project water, to require the
24 implementation of any standards or regulations recom-

1 mended by the Utah Water Conservation Advisory
2 Board.

3 (g) COMPLIANCE.—

4 (1) Notwithstanding subsection (c)(5), (d)(3) or
5 (f)(6), if the Secretary after ninety days written notice
6 to the District, determines that the plan referred to in
7 subsection (b) has not been developed and implemented
8 or the studies referred to in subsections (c) and (d)
9 have not been completed or transmitted as provided for
10 in this section, the District shall pay a surcharge for
11 each year of substantial noncompliance as determined
12 by the Secretary. The amount of the surcharge shall
13 be—

14 (A) for the first year of substantial noncom-
15 pliance, 5 per centum of the District's annual
16 Bonneville Unit repayment obligation to the Sec-
17 retary.

18 (B) for the second year of substantial non-
19 compliance, 10 per centum of the District's
20 annual Bonneville Unit repayment obligation to
21 the Secretary; and

22 (C) for the third year of substantial noncom-
23 pliance and any succeeding year of substantial
24 noncompliance, 15 per centum of the Districts

1 annual Bonneville Unit repayment obligations to
2 the Secretary.

3 (2) If the Secretary determines that compliance
4 has been accomplished within twelve months after a
5 determination of substantial noncompliance, the Secre-
6 tary shall refund 100 per centum of the surcharge
7 levied.

8 (h) DEFERRAL OF ALLOCATED COSTS—Not later than
9 September 30, 1996, or within one year from such later date
10 as the Secretary determines the Bonneville Unit to be sub-
11 stantially complete, the Secretary shall complete and publish
12 a final cost allocation for the Bonneville Unit. Any amounts
13 allocated to municipal and industrial water in excess of the
14 total maximum repayment obligation contained in repayment
15 contracts dated December 28, 1965, and November 26,
16 1985, shall be deferred for as long as the Water Management
17 Improvement Plan specified in this section remains in effect
18 and is approved by the Secretary. If at any time the Secre-
19 tary determines that the District is in substantial noncompli-
20 ance with this section, the Secretary shall, within six months
21 of such determination and after public notice, take action to
22 initiate repayment of all such reimbursable costs.

23 (i) RECLAMATION REFORM ACT OF 1982.—Compli-
24 ance with this section shall be deemed as compliance with
25 sec. 210 of the Reclamation Reform Act of 1982 (96 Stat.

1 1268; 43 U.S.C. 390 jj) by the District and each petitioner of
2 project water.

3 (j) JUDICIAL REVIEW.—(1) For the purposes of sections
4 701 through 706 of title 5 (U.S.C.), the determinations made
5 by the Secretary under subsection (b), (f)(1) or (g) shall be
6 final actions subject to judicial review.

7 (2) The record upon review of such final actions shall be
8 limited to the administrative record compiled in accordance
9 with this subsection. Nothing in this subsection shall be con-
10 strued to require a hearing pursuant to section 554, 556, or
11 557 of title 5 United States Code.

12 (3) Nothing in this subsection shall be construed to pre-
13 clude judicial review of other final actions and decisions by
14 the Secretary.

15 (k) CITIZEN SUITS.—(1) IN GENERAL.—Any person
16 may commence a civil suit on their own behalf against only
17 the Secretary for any determination made by the Secretary
18 under this subsection which is alleged to have been violated,
19 is violating, or is about to violate any provision of this sub-
20 section or determination made under this subsection.

21 (2) JURISDICTION AND VENUE.—The district courts
22 shall have jurisdiction to prohibit any violation of this subsec-
23 tion, to compel any action required by this subsection, and to
24 issue any other order to further the purposes of this subsec-
25 tion. An action under this section may be brought in the judi-

1 cial district where the alleged violation occurred or is about
2 to occur, where fish, wildlife, or recreation resources are lo-
3 cated, or in the District of Columbia.

4 (3) LIMITATIONS.—(A) No action may be commenced
5 under paragraph (1) before sixty days after written notice of
6 the violation of such provision has been given to the Secre-
7 tary.

8 (B) Notwithstanding subparagraph (A), an action may
9 be brought immediately after such notification in the case of
10 any action under this subsection respecting an emergency
11 posing a significant risk to the well-being of any species of
12 fish or wildlife.

13 (C) Subparagraph (A) is intended to provide reasonable
14 notice where possible and not to affect the jurisdiction of the
15 courts.

16 (4) COSTS AWARDED BY THE COURT.—The court may
17 award costs of litigation (including reasonable attorney and
18 expert witness fees and expenses) to any part, other than the
19 United States, whenever the court determines such award is
20 appropriate.

21 (5) DISCLAIMER.—The relief provided by this subsec-
22 tion shall not restrict any right which any person (or class of
23 persons) may have under any statute or common law to seek
24 enforcement of any standard of limitation or to seek any
25 other relief.

1 (2) **PRESERVATION OF STATE LAW.**—Nothing in this
2 section shall be deemed to preempt or supersede State law.

3 **SEC. 108. LIMITATION ON HYDROPOWER OPERATIONS.**

4 (a) **LIMITATION.**—Power generation facilities associat-
5 ed with the Central Utah Project and other features specified
6 in this Act shall be operated and developed in accordance
7 with the Act of April 11, 1956 (70 Stat. 109; 43 U.S.C.
8 620f).

9 (b) **COLORADO RIVER BASIN WATERS.**—Use of Cen-
10 tral Utah Project water diverted out of the Colorado River
11 Basin for power purposes shall only be incidental to the de-
12 livery of water for other authorized project purposes. Diver-
13 sion of such waters out of the Colorado River Basin exclu-
14 sively for power purposes is prohibited.

15 **SEC. 109 OPERATING AGREEMENT.**

16 The District, in consultation with the Commission, the
17 Utah Division of Water Rights and the Bureau, shall apply
18 its best efforts to achieve operating agreements for the Jor-
19 danelle Reservoir, Deer Creek Reservoir, Utah Lake and
20 Strawberry Reservoir by January 1, 1992.

21 **SEC. 110. JORDAN AQUEDUCT PREPAYMENT.**

22 Under such terms as the Secretary shall prescribe, the
23 Secretary shall allow for the prepayment, or shall otherwise
24 dispose of, repayment contracts entered into among the
25 United States, the District, the Salt Lake City Metropolitan

1 Water District, and the Salt Lake County Water Conservan-
2 cy District, dated May 16, 1986, providing for repayment of
3 the Jordan Aqueduct System. In carrying out this section,
4 the Secretary shall take such actions as he deems appropriate
5 to accommodate, effectuate, the otherwise protect the rights
6 and obligations of the United States and the obligors under
7 the contracts executed to provide for payment of such repay-
8 ment contracts.

9 SEC. 111. AUDIT OF CENTRAL UTAH PROJECT COST ALLOCA-
10 TIONS.

11 Not later than one year after the date on which the
12 Secretary declares the Central Utah Project to be substan-
13 tially complete, the Comptroller General of the United States
14 shall conduct an audit of the allocation of costs of the Central
15 Utah Project to irrigation, municipal and industrial, and other
16 project purposes and submit a report of such audit to be Sec-
17 retary and to the Congress. The audit shall be conducted in
18 accordance with regulations which the Comptroller General
19 shall prescribe not later than one year after the date of enact-
20 ment of this Act. Upon a review of such report, the Secretary
21 shall reallocate such costs as may be necessary. Any amount
22 allocated to municipal and industrial water in excess of the
23 total maximum repayment obligation contained in repayment
24 contracts dated December 28, 1965, and November 26,
25 1985, shall be deferred for as long as the District is not found

1 to be in substantial noncompliance with the water manage-
2 ment improvement program provided in section 107 and the
3 stream flows provided in title II are maintained. If at any
4 time the Secretary finds that such program is in substantial
5 noncompliance or that such stream flows are not being main-
6 tained, the Secretary shall, within six months of such finding
7 and after public notice, take action to initiate repayment of
8 all such reimbursable costs.

9 **SEC. 112. EXCESS CROPS.**

10 Notwithstanding any other provision of law relating to a
11 charge for irrigation water supplied to surplus crops, until the
12 construction costs of the facilities authorized by this title are
13 repaid, the Secretary is directed to charge a surplus crop
14 production charge equal to 10 per centum of full cost, as
15 defined in section 202 of the Reclamation Reform of 1982
16 (43 U.S.C. 390bb), for the delivery of project water used in
17 the production of any basic agricultural commodity if the
18 total supply of such commodity for the marketing years in
19 which the bulk of the crop would normally be marketed is in
20 excess of the normal supply as determined by the Secretary
21 of Agriculture. The Secretary of the Interior shall announce
22 the amount of the surplus crop production charge for the suc-
23 ceeding year on or before July 1 of each year.

1 TITLE II—FISH, WILDLIFE, AND RECREATION
2 MITIGATION AND CONSERVATION

3 SEC. 201. UTAH RECLAMATION MITIGATION AND CONSERVA-
4 TION COMMISSION.

5 (a) PURPOSE.—(1) The purpose of this section is to pro-
6 vide for the prompt establishment of the Utah Reclamation
7 Mitigation and Conservation Commission in order to coordi-
8 nate the implementation of the mitigation and conservation
9 provisions of this Act among the Federal and State fish, wild-
10 life, and recreation agencies.

11 (2) This section, together with applicable environmental
12 laws and the provisions of other laws applicable to mitiga-
13 tion, conservation and enhancement of fish, wildlife, and
14 recreation resources within the State, are all intended to be
15 construed in a consistent manner. Nothing herein is intended
16 to limit or restrict the authorities or opportunities of Federal,
17 State, or local governments, or political subdivisions thereof,
18 to plan, develop, or implement mitigation, conservation, or
19 enhancement of fish, wildlife, and recreation resources in the
20 State in accordance with other applicable provisions of Fed-
21 eral or State law.

22 (b) ESTABLISHMENT.—(1) There is established a com-
23 mission to be known as the Utah Reclamation Mitigation and
24 Conservation Commission.

1 (2) The Commission shall expire twenty years from the
2 end of the fiscal year during which the Secretary declares the
3 Central Utah Project to be substantially complete. The Sec-
4 retary shall not declare the project to be substantially com-
5 plete at least until such time as the mitigation and conserva-
6 tion projects and features provided for in section 215 have
7 been completed in accordance with the fish, wildlife, and
8 recreation mitigation and conservation schedule specified
9 therein.

10 (c) DUTIES.—The Commission shall—

11 (1) formulate the policies and objectives for the
12 implementation of the fish, wildlife, and recreation
13 mitigation and conservation projects and features au-
14 thorized in this Act;

15 (2) administer in accordance with subsection (f)
16 the expenditure of funds for the implementation of the
17 fish, wildlife, and recreation mitigation and conserva-
18 tion projects and features authorized in this Act;

19 (3) comply with the requirements of all Federal
20 fish, wildlife, recreation, and environmental laws, in-
21 cluding (but not limited to) the Fish and Wildlife Co-
22 ordination Act, the National Environmental Policy Act
23 of 1969, and the Endangered Species Act of 1973; and

24 (4) develop, adopt, and submit plans and reports
25 of its activities in accordance with subsection (g).

1 (d) **MEMBERSHIP.**—(1) The Commission shall be com-
2 posed of five members appointed by the President as follows:

3 (A) One from a list of residents of the State, who
4 are qualified to serve on the Commission by virtue of
5 their training or experience in fish or wildlife matters
6 or environmental conservation matters, submitted by
7 the Speaker of the House of Representatives upon the
8 recommendation of the members of the House of Rep-
9 resentatives representing the State.

10 (B) One from a list of residents of the State, who
11 are qualified to serve on the Commission by virtue of
12 their training or experience in fish or wildlife matter or
13 environmental conservation matters, submitted by the
14 majority leader of the Senate upon the recommendation
15 of the members of the Senate representing the State.

16 (C) One from a list of residents of the State sub-
17 mitted by the Governor of the State composed of State
18 wildlife resource agency personnel.

19 (D) One from a list of residents of the State sub-
20 mitted by the District.

21 (E) One from a list of residents of the State, who
22 are qualified to serve on the Commission by virtue of
23 their training or experience in fish and wildlife matters
24 or environmental conservation matters and have been
25 recommended by Utah nonprofit sportsmen's or envi-

1 ronmental organizations, submitted by the Government
2 of the State.

3 (2)(A) Except as provided in subparagraph (B), members
4 shall be appointed for terms of four years.

5 (B) Of the members first appointed—

6 (i) the member appointed under paragraph (1)(C)
7 shall be appointed for a term of three years; and

8 (ii) the member appointed under paragraph (1)(D)
9 shall be appointed for a term of two years.

10 (3) A vacancy in the Commission shall be filed within
11 ninety days and in the manner in which the original appoint-
12 ment was made. Any member appointed to fill a vacancy
13 occurring before the expiration of the term for which his
14 predecessor was appointed shall be appointed only for the
15 remainder of such term. A member may serve after the expi-
16 ration of his term until his successor has taken office.

17 (4)(A) Except as provided in subparagraph (B), members
18 of the Commission shall each be paid at a rate equal to the
19 daily equivalent of the maximum of the annual rate of basic
20 pay in effect for grade GS-15 of the General Schedule for
21 each day (including travel time) during which they are en-
22 gaged in the actual performance of duties vested in the Com-
23 mission.

1 (B) Members of the Commission who are full-time offi-
2 cers or employees of the United States or the State of Utah
3 shall receive no additional pay by reason of their service on
4 the Commission.

5 (5) Three members of the Commission shall constitute a
6 quorum but a lesser number may hold public meetings au-
7 thorized by the Commission.

8 (6) The Chairman of the Commission shall be elected by
9 the members of the Commission. The term of office of the
10 Chairman shall be one year.

11 (7) The Commission shall meet at least quarterly and
12 may meet at the call of the Chairman or a majority of its
13 members.

14 (e) DIRECTOR AND STAFF OF COMMISSION; USE OF
15 CONSULTANTS.—(1) The Commission shall have a Director
16 who shall be appointed by the Commission and who shall be
17 paid at a rate not to exceed the maximum rate of basic pay
18 payable for GS-15 of the General Schedule.

19 (2) With the approval of the Commission, the Director
20 may appoint and fix the pay of such personnel as the Director
21 considers appropriate. Such personnel may be appointed
22 without regard to the provisions of title 5, United States
23 Code, governing appointments in the competitive service, and
24 may be paid without regard to the provisions of chapter 51

1 and subchapter III of chapter 53 of such title relating to
2 classification and General Schedule pay rates.

3 (3) With the approval of the Commission, the Director
4 may procure temporary and intermittent services under sec-
5 tion 3109(b) of title 5 of the United States Code, but at rates
6 for individuals not to exceed the daily equivalent of the maxi-
7 mum annual rate of basic pay payable for GS-15 of the Gen-
8 eral Schedule.

9 (4) Upon request of the Commission, the head of any
10 Federal agency is authorized to detail, on a reimbursable
11 basis, any of the personnel of such agency to the Commission
12 to assist the Commission in carrying out its duties under this
13 Act.

14 (5) Any member or agent of the Commission may, if so
15 authorized by the Commission, take any action which the
16 Commission is authorized to take by this section.

17 (6) In times of emergency, as defined by rule by the
18 Commission, the Director may exercise the full powers of the
19 Commission until such times as the emergency ends or the
20 Commission meets in formal session.

21 (f) **IMPLEMENTATION OF MITIGATION AND CONSERVA-**
22 **TION MEASURES.**—(1) The Commission shall administer the
23 mitigation and conservation funds available under this Act to
24 conserve, mitigate, and enhance fish, wildlife, and recreation
25 resources affected by the development and operation of Fed-

1 eral reclamation projects in the State of Utah. Such funds
2 shall be administered in accordance with this section, the
3 mitigation and conservation schedule in section 215 of this
4 Act, and, if in existence, the applicable five-year plan adopt-
5 ed pursuant to subsection (g). Expenditures of the Commis-
6 sion pursuant to this section shall be in addition to, not in lieu
7 of, other expenditures authorized or required from other enti-
8 ties under other agreements or provisions of law.

9 (2) REALLOCATION OF SECTION 8 FUNDS.—Notwith-
10 standing any provision of this Act which provides that a spec-
11 ified amount of funds available under section 8 shall be avail-
12 able only for a certain purpose, if the Commission deter-
13 mines, after public involvement and agency consultation as
14 provided in subsection (g)(3), that the benefits to fish, wildlife,
15 or recreation will be better served by allocating such funds in
16 a different manner, then the Commission may reallocate any
17 amount so specified to achieve such benefits.

18 (3) CONTRACTING AUTHORITY.—The Commission
19 shall, for the purpose of carrying out this Act, enter into and
20 perform such contracts, leases, grants, cooperative agree-
21 ments, or other similar transactions, including the amend-
22 ment, modification, or cancellation thereof and make the
23 compromise or final settlement of any claim arising there-
24 under, with the appropriate public natural resource manage-
25 ment agency or agencies, upon such terms and conditions and

1 in such manner as the Commission may deem to be necessary
2 or appropriate, for the implementation of the mitigation and
3 conservation projects and features authorized in this Act, in-
4 cluding actions necessary for compliance with the National
5 Environmental Policy Act of 1969.

6 (g) PLANNING AND REPORTING.—(1) Beginning with
7 the first fiscal year after all members of the Commission are
8 appointed initially, and every five years thereafter, the Com-
9 mission shall develop and adopt by March 31 a plan for car-
10 rying out its duties during such succeeding five-year period.
11 Each such plan shall consist of the specific objectives and
12 measures the Commission intends to administer under sub-
13 section (f) during the plan period to implement the mitigation
14 and conservation projects and features authorized in this Act.

15 (2) FINAL PLAN.—Within six months prior to the expi-
16 ration of the Commission pursuant to this Act, the Commis-
17 sion shall develop and adopt a plan which shall—

18 (A) establish goals and measurable objectives for
19 the mitigation and conservation of fish, wildlife, and
20 recreation resources during the five-year period follow-
21 ing such expiration; and

22 (B) recommend specific measures for the expendi-
23 ture of funds from the Account established under sec-
24 tion 302 of this Act.

1 (3) PUBLIC INVOLVEMENT AND AGENCY CONSULTA-
2 TION.—(A) Promptly after the Commission is established
3 under this section, and in each succeeding fiscal year, the
4 Commission shall request in writing from the Federal and
5 State fish, wildlife, recreation, and water management agen-
6 cies, the appropriate Indian tribes, and the public, recommen-
7 dations for objectives and measures to implement the mitiga-
8 tion and conservation projects and features authorized in this
9 Act or amendments thereto. The Commission shall establish
10 by rule a period of time not less than ninety days in length
11 within which to receive such recommendations, as well as the
12 format for and the information and supporting data that is to
13 accompany such recommendations.

14 (B) The Commission shall give notice of all recommen-
15 dations and shall make the recommendations and supporting
16 documents available to the Federal and State fish, wildlife,
17 recreation, and water management agencies, the appropriate
18 Indian tribes, and the public. Copies of such recommenda-
19 tions and supporting documents shall be made available for
20 review at the offices of the Commission and shall be available
21 for reproduction at reasonable cost.

22 (C) The Commission shall provide for public involve-
23 ment regarding the recommendations and supporting docu-
24 ments within such reasonable time as the Commission by rule
25 deems appropriate.

1 (4) The Commission shall develop and amend the plans
2 on the basis of such recommendations, supporting documents,
3 and views and information obtained through public involve-
4 ment and agency consultation. The Commission shall include
5 in the plans measures which it determines, on the basis set
6 forth in paragraph (f)(1), will—

7 (A) restore, maintain, or enhance the biological
8 productivity and diversity of natural ecosystems within
9 the State of Utah that have the greatest potential for
10 providing fish, wildlife, and recreation mitigation and
11 conservation opportunities;

12 (B) be based on, and supported by, the best avail-
13 able scientific knowledge;

14 (C) utilize, where equally effective alternative
15 means of achieving the same sound biological or recre-
16 ational objectives exist, the alternative that will also
17 provide public benefits through multiple resource uses;

18 (D) complement the existing and future activities
19 of the Federal and State fish, wildlife, and recreation
20 agencies and appropriate Indian tribes;

21 (E) utilities, when available, cooperative agree-
22 ments and partnerships with private landowners and
23 nonprofit conservation organizations; and

24 (F) be consistent with the legal rights of appropri-
25 ate Indian tribes.

1 Enhancement measures may be included in the plans
2 to the extent such measures are designed to achieve
3 improved conservation or mitigation of resources.

4 (5) REPORTING.—(A) Beginning on December 1, of the
5 first fiscal year in which all members of the Commission are
6 appointed initially, the Commission shall submit annually a
7 detailed report to the Committee on Energy and Natural Re-
8 sources of the Senate, to the Committees on Interior and
9 Insular Affairs and on Merchant Marine and Fisheries of the
10 House of Representatives, to the Secretary, and to the Gov-
11 ernor of the State. The report shall describe the actions taken
12 and to be taken by the Commission under this section, the
13 effectiveness of the mitigation and conservation measures im-
14 plemented to date, and potential revisions or modifications to
15 the applicable mitigation and conservation plan.

16 (B) At least sixty days prior to its submission of such
17 report, the Commission shall make a draft of such report
18 available to the Federal and State fish, wildlife, recreation,
19 and water management agencies, the appropriate Indian
20 tribes, and the public, and establish procedures for timely
21 comments thereon. The Commission shall include a summary
22 of such comments as an appendix to such report.

23 (h) DISCRETIONARY DUTIES AND POWERS.—In addi-
24 tion to any other duties and powers provided by law—

1 (1) The Commission may depart from the fish,
2 wildlife, and recreation mitigation and conservation
3 schedule specified in section 215 whenever the Com-
4 mission determines, after public involvement and
5 agency consultation as provided for in this Act, that
6 such departure would be of greater benefit to fish,
7 wildlife, or recreation.

8 (2) The Commission may, for the purpose of car-
9 rying out this Act, (A) hold such public meetings, sit
10 and act at such times and places, take such testimony,
11 and receive such evidence, as a majority of the Com-
12 mission considers appropriate; and

13 (B) meet jointly with other Federal or State au-
14 thorities to consider matters of mutual interest.

15 (3) The Commission may secure directly from any
16 department or agency of the United States information
17 necessary to enable it to carry out this Act. Upon re-
18 quest of the Director of the Commission, the head of
19 such department or agency shall furnish such informa-
20 tion to the Commission.

21 (4) The Commission may accept, use, and dispose
22 of appropriations, gifts or grants of money or other
23 property, or donations of services, from whatever
24 source, only to carry out the purposes of this Act.

1 (5) The Commission may use the United States
2 mails in the same manner and under the same condi-
3 tions as other departments and agencies of the United
4 States.

5 (6) The Administrator of General Services shall
6 provide to the Commission on a reimbursable basis
7 such administrative support services as the Commission
8 may request.

9 (7) The Commission may acquire and dispose of
10 personal and real property and water rights, and inter-
11 ests therein, through donation, purchase, sale, or lease,
12 but not through direct exercise of the power of eminent
13 domain, in order to carry out the purposes of this Act.
14 This shall not affect any existing authorities of other
15 agencies to carry out the purposes of this Act.

16 (8) The Commission may make such expenditures
17 for offices, vehicles, furnishings, equipment, supplies,
18 and books; for travel, training, and attendance at meet-
19 ings; and for such other facilities and services as may
20 be necessary for the administration of this Act.

21 (9) The Commission shall not participate in litiga-
22 tion, except litigation pursuant to subsection (1) or con-
23 demnation proceedings initiated by other agencies.

24 (i) FUNDING.—(1) Amounts appropriated to the Secre-
25 tary for the Commission shall be paid to the Commission im-

1 mediately upon receipt of such funds by the Secretary. The
2 Commission shall expend such funds in accordance with this
3 Act.

4 (2) Except as provided in paragraph (3), the only
5 amounts available to the Commission for noncontract ex-
6 penses are amounts made available pursuant to subsection
7 (h)(4) and the amounts appropriated to the Secretary for the
8 Commission.

9 (3) Notwithstanding any other provision of this Act, not
10 more than the lesser of—

11 (A) \$100,000,000 of the amounts made available
12 for a fiscal year to the Commission pursuant to this
13 Act, or

14 (B) 10 per centum of the amounts appropriated to
15 the Commission for a fiscal year for fish, wildlife, and
16 recreation mitigation and enhancement,
17 may be used by the Commission for noncontract expenses.

18 (j) AVAILABILITY OF UNEXPENDED AMOUNTS UPON
19 COMPLETION OF CONSTRUCTION PROJECTS.—Notwith-
20 standing any other provision of law, upon the completion of
21 any project authorized under this title, Federal funds appro-
22 priated for that project but not obligated or expended shall be
23 available to the Commission for allocation and expenditure in
24 a manner which benefits fish, wildlife, or recreation.

1 (k) TRANSFER OF PROPERTY AND AUTHORITY HELD
2 BY THE COMMISSION.—Except as provided in section
3 302(b)(4)(A), upon the termination of the Commission in ac-
4 cordance with subsection (b)—

5 (1) the duties of the Commission shall be per-
6 formed by the Utah Division of Wildlife Resources,
7 which shall exercise such authority in consultation with
8 the United States Fish and Wildlife Service, the Dis-
9 trict, the Bureau, and the Forest Service; and

10 (2) title to any real and personal properties then
11 held by the Commission shall be transferred to the
12 Utah Department of Natural Resources or, for such
13 parcels of real property as may be within the bound-
14 aries of Federal land ownerships to the appropriate
15 Federal agency.

16 (l) REPRESENTATION BY ATTORNEY GENERAL.—The
17 Attorney General of the United States shall represent the
18 Commission in any litigation to which the Commission is a
19 party.

20 (m) CONGRESSIONAL OVERSIGHT.—The activities of
21 the Commission shall be subject to oversight by the Con-
22 gress.

23 (n) TERMINATION OF BUREAU ACTIVITIES.—Upon es-
24 tablishment of the Commission as provided in subsection (b),

1 the responsibility for implementing section 8 shall be trans-
2 ferred from the Bureau to the Commission.

3 **SEC. 202. INCREASED PROJECT WATER CAPABILITY.**

4 (a) **ACQUISITION.**—The District shall acquire, on an ex-
5 pedited basis with funds to be provided by the Commission in
6 accordance with the schedule specified in section 215, by
7 purchase from willing sellers or exchange, twenty-five thou-
8 sand acre-feet of additional permanent storage waters above
9 Deer Creek Reservoir or the equivalent thereof in the Provo
10 River Drainage to achieve the purposes of this section. Of the
11 amounts authorized to be appropriated by section 101,
12 \$15,000,000 shall be available only for the purposes of this
13 subsection.

14 (b) **NONCONSUMPTIVE RIGHTS.**—A nonconsumptive
15 right in perpetuity to any water acquired under this section
16 shall be tendered in accordance with the laws of the State of
17 Utah within thirty days of its acquisition by the District to
18 the Utah Division of Wildlife Resources for the purposes of
19 maintaining instream flows for fish, wildlife, and recreation in
20 the Provo River between Murdock diversion and Utah Lake.

21 (c) **AUTHORIZATION OF APPROPRIATIONS.**—Of the
22 amounts authorized to be appropriated by section 101,
23 \$4,000,000 shall be available only to modify existing or con-
24 struct new diversion structures on the Provo River below the
25 Murdock diversion to facilitate the purposes of this section.

1 SEC. 203. STREAM FLOWS.

2 (a) STREAM FLOW AGREEMENT.—The District shall
3 annually provide, from project water if necessary, amounts of
4 water sufficient to sustain the minimum stream flows estab-
5 lished pursuant to the Stream Flow Agreement.

6 (b) INCREASED FLOWS IN THE UPPER STRAWBERRY
7 RIVER TRIBUTARIES.—(1) The District shall acquire, on an
8 expedited basis with funds to be provided by the Commission
9 in accordance with the schedule specified in section 215, all
10 of the Strawberry Basin water rights being diverted to the
11 Heber Valley through the Daniel's Creek drainage and shall
12 apply such rights to increase minimum stream flows—

13 (A) in the upper Strawberry River and other trib-
14 utaries to the Strawberry Reservoir;

15 (B) in the lower Strawberry River from the base
16 of Soldier Creek Dam to Starvation Reservoir; and

17 (C) in other streams within the Uinta Basin af-
18 fected by the Strawberry Collection System in such a
19 manner as deemed by the Commission to be in the best
20 interest of fish and wildlife.

21 The Commission's decision under subparagraph (C) shall not
22 establish a statutory or otherwise mandatory minimum
23 stream flow.

24 (2) The District may acquire the water rights identified
25 in paragraph (1) prior to completion of the facilities identified
26 in section 102 either by purchase or lease from willing sellers

1 or by replacement or exchange of water in kind. The District
2 shall proceed to fulfill the purposes of this subsection on an
3 expedited basis.

4 (3) Any water acquired under this subsection by the
5 District shall be tendered in accordance with the laws of the
6 State of Utah within thirty days of its acquisition by the Dis-
7 trict to the Utah Division of Wildlife Resources for the pur-
8 poses of providing stream flows under paragraph (1).

9 (4) Of the amounts authorized to be appropriated by sec-
10 tion 101, \$3,500,000 shall be available only for the acqui-
11 sition of water under paragraph (1).

12 (5) Water made available pursuant to paragraph (1)
13 shall be in addition to water described in subsection (a).

14 (c) STREAM FLOWS IN THE BONNEVILLE UNIT.—The
15 yield and operating plans for the Bonneville Unit of the Cen-
16 tral Utah Project shall be established or adjusted to provide
17 for the following minimum stream flows, which flows shall be
18 provided continuously, and in perpetuity from the date first
19 feasible, as determined by the Commission:

20 (1) In the Diamond Fork River drainage subse-
21 quent to completion of the Monks Hollow Dam or
22 other structure that rediverts water from the Diamond
23 Fork River Drainage into the Diamond Fork compo-
24 nent of the Bonneville Unit of the Central Utah
25 Project—

1 (A) in Sixth Water Creek, from the exit of
2 Strawberry Valley tunnel to the Last Chance
3 Powerplant and Switchyard, not less than thirty-
4 two cubic feet per second during the months of
5 May through October and not less than twenty-
6 five cubic feet per second during the months of
7 November through April, and

8 (B) in the Diamond Fork River, from the
9 bottom of the Monks Hollow Dam to the Spanish
10 Fork River, not less than eighty cubic feet per
11 second during the months of May through Sep-
12 tember and not less than sixty cubic feet per
13 second during the months of October through
14 April, which flows shall be provided by the Bon-
15 neville Unit of the Central Utah Project.

16 (2) In Provo River from the base of Jordanelle
17 Dam to Deer Creek Reservoir a minimum of one hun-
18 dred and twenty-five cubic feet per second.

19 (3) In the Provo River from the confluence of
20 Deer Creek and the Provo River to the Olmsted diver-
21 sion of a minimum of one hundred cubic feet per
22 second.

23 (4) Upon the acquisition of the water rights in the
24 Provo drainage identified in section 202, in the Provo

1 River from the Olmsted diversion of Utah Lake, a min-
2 imum of seventy-five cubic feet per second.

3 (5) In the Strawberry River, from the base of
4 Starvation Dam to the confluence with the Duchesne
5 River, a minimum of fifteen cubic feet per second.

6 (d) MITIGATION OF EXCESSIVE FLOWS IN THE PROVO
7 RIVER.—The District shall, with public involvement, prepare
8 and conduct a study and develop a plan to mitigate the ef-
9 fects of peak season flows in the Provo River. Such study
10 and plan shall be developed in consultation with the Fish and
11 Wildlife Service, the Utan Division of Water Rights, the
12 Utah Division of Wildlife Resources, affected water right
13 holders and users, the Commission, and the Bureau. The
14 study and plan shall reflect, at a minimum, all mitigation and
15 enhancement opportunities identified through—

16 (1) a fishery and recreational use study that ad-
17 dresses anticipated peak flows;

18 (2) study of the mitigation and enhancement op-
19 portunities possible through habitat or stream bed
20 modification;

21 (3) study of the mitigation and enhancement op-
22 portunities associated with the operating agreements
23 referred to in section 109;

1 (4) study of the mitigation and enhancement op-
2 portunities associated with the water acquisitions con-
3 templated by section 202;

4 (5) study of the mitigation and enhancement op-
5 portunities associated with section 102(2);

6 (6) study of the mitigation and enhancement op-
7 portunities available in connection with water right ex-
8 changes; and

9 (7) study of the mitigation and enhancement op-
10 portunities that could be achieved by construction of a
11 bypass flowline from the base of Deer Creek Reservoir
12 to the Olmsted diversion.

13 (e) EARMARK.—Of the amounts authorized to be appro-
14 priated by section 101, \$500,000 shall be available only for
15 the implementation of subsection (d).

16 (f) STRAWBERRY VALLEY TUNNEL.—(1) Upon comple-
17 tion of the Diamond Fork System, the Strawberry Tunnel
18 shall not be used except for deliveries of water for the in-
19 stream purposes specified in subsection (c). All other waters
20 for the Bonneville Unit and Strawberry Valley Reclamation
21 Project purposes shall be delivered through the Diamond
22 Fork System.

23 (2) Paragraph (1) shall not apply during any time in
24 which the District, in consultation with the Commission, has
25 determined that the Syar Tunnel or the Sixth Water Aque-

1 duct is rendered unusable or emergency circumstances re-
2 quire the use of the Strawberry Tunnel for the delivery of
3 contracted Central Utah Project water and Strawberry
4 Valley Reclamation Project water.

5 SEC. 204. FISH, WILDLIFE, AND RECREATION PROJECTS IDENTI-
6 FIED OR PROPOSED IN THE 1988 DEFINITE
7 PLAN REPORT FOR THE CENTRAL UTAH
8 PROJECT.

9 The fish, wildlife, and recreation projects identified or
10 proposed in the 1988 Definite Plan Report which have not
11 been completed as of the date of enactment of this Act shall
12 be completed in accordance with the 1988 Definite Plan
13 Report and the schedule specified in section 215. The amount
14 expended for any such project, as provided in the 1988 Defi-
15 nite Plan Report, and which is not provided for within the
16 remaining project ceiling, shall be treated as if that amount
17 was made available from the amounts authorized to be appro-
18 priated by section 101 only for that project, unless modified
19 by this Act.

20 SEC. 205. WILDLIFE LANDS AND IMPROVEMENTS.

21 (a) ACQUISITION OF RANGELANDS.—In addition to
22 lands acquired on or before the date of enactment of this Act
23 and in addition to the acreage to be acquired in accordance
24 with the 1988 Definite Plan Report, the Commission shall
25 acquire on an expedited basis with funds to be provided by

1 the Commission, in accordance with the schedule specified in
2 section 215 and a plan to be developed by the Commission,
3 big game winter range lands to compensate for the impacts of
4 Federal reclamation projects in Utah. Such lands shall be
5 transferred to the Utah Division of Wildlife Resources or, for
6 such parcels as may be within the boundaries of Federal land
7 ownerships, to the appropriate Federal agency, for manage-
8 ment as a big game winter range. Of the amounts authorized
9 to be appropriated by section 101, \$1,300,000 shall be avail-
10 able only for the purposes of this subsection.

11 (b) BIG GAME CROSSINGS AND WILDLIFE ESCAPE
12 RAMPS.—In addition to the measures to be taken in accord-
13 ance with the 1988 Definite Plan Report, the Commission
14 shall construct big game crossings and wildlife escape ramps
15 for the protection of big game animals along the Provo Res-
16 ervoir Canal, Highline Canal, Strawberry Power Canal, and
17 others. Of the amounts authorized to be appropriated by sec-
18 tion 101, \$750,000 shall be available only for the purposes of
19 this subsection.

20 SEC. 206. WETLANDS ACQUISITION, REHABILITATION, AND
21 ENHANCEMENT.

22 (a) WETLANDS AROUND THE GREAT SALT LAKE.—Of
23 the amounts authorized to be appropriated by section 101,
24 \$14,000,000 shall be available only for the planning and im-
25 plementation of projects to preserve, rehabilitate, and en-

1 hance wetland areas around the Great Salt Lake in accord-
2 ance with a plan to be developed by the Commission.

3 (b) INVENTORY OF SENSITIVE SPECIES AND ECOSYS-
4 TEMS.—The Commission shall, in cooperation with the Utah
5 Division of Wildlife Resources, inventory, prioritize, and map
6 the occurrences in Utah of sensitive nongame wildlife species
7 and their habitats.

8 (c) UTAH LAKE WETLANDS PRESERVE.—(1) The Sec-
9 retary, through the United States Fish and Wildlife Service,
10 shall, in accordance with paragraph (9), acquire private land,
11 water rights, conservation easements, or other interests
12 therein, necessary for the establishment of a wetlands pre-
13 serve adjacent to or near the Goshen Bay and Benjamin
14 Slough areas of Utah Lake as depicted on a map entitled
15 “Utah Lake Wetland Preserve” and dated ———. Such a
16 map shall be on file and available for inspection in the office
17 of the Secretary of the Interior, Washington, District of
18 Columbia.

19 (2) The Secretary shall enter into an agreement under
20 which the Wetlands Preserve acquired under subparagraph
21 (1) shall be managed by the Utah Division of Wildlife Re-
22 sources pursuant to a plan developed in consultation with the
23 Secretary and in accordance with this Act and the substan-
24 tive requirements of the National Wildlife Refuge System
25 Administration Act of 1966 (16 U.S.C. 668dd et seq.).

1 (3) The Wetlands Preserve shall be managed for the
2 protection of migratory birds, wildlife habitat, and wetland
3 values in a manner compatible with the surrounding farm-
4 lands, orchards, and agricultural production area. Grazing
5 will be allowed for wildlife habitat management purposes in
6 accordance with the Act referenced in paragraph (2) and as
7 determined by the Division to be compatible with the pur-
8 poses stated herein.

9 (4) Nothing in this subsection shall restrict traditional
10 agricultural practices (including the use of pesticides) on adja-
11 cent properties not included in the preserve by acquisition or
12 easement.

13 (5) Nothing in this subsection shall preempt existing
14 water rights under Utah State law.

15 (6) Nothing in this subsection shall grant authority to
16 the Secretary to introduce a federally protected species into
17 the Wetlands Preserve.

18 (7) The creation of this Preserve shall not in any way
19 interfere with the operation of the irrigation and drainage
20 system authorized by section 102(1).

21 (8) All water rights not appurtenant to the lands pur-
22 chased for the Wetlands Preserve acquired under paragraph
23 (1) shall be purchased from the District at an amount not to
24 exceed the cost of the District in acquiring such rights.

1 (9) It is the intent of Congress that acquisition and de-
2 velopment of the Utah Lake Wetlands Preserve pursuant to
3 subparagraph (1) be accomplished with funds made available
4 for such purposes pursuant to section 4 of the Act of March
5 16, 1934 (16 U.S.C. 718d), the Land and Water Conserva-
6 tion Act of 1965 (16 U.S.C. 4601-4 et seq.), or such other
7 funds as may be available to the Secretary, the Commission,
8 or its successor.

9 (10) Lands or easements may not be acquired pursuant
10 to this subsection without the consent of the owner of such
11 lands.

12 (11) Base property of a lessee or permittee (and the
13 heirs of such lessee or permittee) under a Federal grazing
14 permit or lease held on the date of enactment of this Act
15 shall include any land of such lessee or permittee acquired by
16 the Secretary under this subsection.

17 (12) Of the amounts authorized to be appropriated by
18 section 101, \$750,000 shall be available only to carry out
19 paragraph (1) of this section.

20 (13) The Commission shall, in cooperation with the
21 Utah Department of Natural Resources, inventory, prioritize,
22 and map the occurrences in Utah of sensitive plant species
23 and ecosystems.

24 (14) Of the amounts authorized to be appropriated by
25 section 101, \$750,000 shall be available for the Utah Nation-

1 al Heritage Program only to carry out paragraph (3) of this
2 section.

3 **SEC. 207. FISHERIES ACQUISITION, REHABILITATION, AND EN-**
4 **HANCEMENT.**

5 Of the amounts authorized to be appropriated by section
6 101, the following amounts shall be in addition to amounts
7 available under the 1988 Definite Plan Report and shall be
8 available only for fisheries acquisition, rehabilitation, and im-
9 provement within the State:

10 (1) \$750,000 for fish habitat restoration on the
11 Provo River between the Jordanelle and Deer Creek
12 Reservoirs;

13 (2) \$4,000,000 for fish habitat restoration in
14 streams impacted by Federal reclamation projects in
15 Utah;

16 (3) \$1,000,000 for the restoration of tributaries of
17 the Strawberry Reservoir to assure trout spawning
18 recruitment;

19 (4) \$1,500,000 for post-treatment management
20 and fishery development costs at the Strawberry Res-
21 ervoir;

22 (5) \$1,000,000 for (A) a study to be conducted as
23 directed by the Commission to determine the appropri-
24 ate means for improving Utah Lake as a warm water
25 fishery and other related issues; and (B) development

1 of facilities and programs to implement management
2 objectives;

3 (6) \$1,000,000 for fish habitat restoration and im-
4 provements in the Diamond Fork River and Sixth
5 Water Creek drainages;

6 (7) 475,000 for the restoration of native cutthroat
7 trout populations in streams and lakes in the Bonne-
8 ville Unit project area; and

9 (8) \$2,500,000 for watershed restoration and im-
10 provements, erosion control, and wildlife habitat resto-
11 ration and improvements in the Avintaquin, Red, and
12 Currant Creek drainages and other Strawberry River
13 drainages affected by the development of Federal recla-
14 mation projects in Utah.

15 SEC. 208. STABILIZATION OF HIGH MOUNTAIN LAKES IN THE
16 UINTA MOUNTAINS.

17 (a) REVISION OF PLAN.—The project plan for the stabi-
18 lization of high mountain lakes in the Upper Provo River
19 drainage shall be revised to require that the following lakes
20 will be stabilized at levels beneficial for fish habitat and
21 recreation: Big Elk, Crystal, Duck, Fire, Island, Long, Wall,
22 Marjorie, Pot, Star, Teapot, and Weir. Overland access by
23 vehicles or equipment for stabilization and irrigation purposes
24 under this subsection shall be minimized within the Lakes
25 Management Area boundary, as depicted on the map in the

1 Wasatch-Cache National Forest Plan (p. IV-166, dated
2 1987), to a level of practical necessity.

3 (b) COSTS OF REHABILITATION.—(1) The costs of re-
4 habilitating water storage features at Trial and Washington
5 Lakes which are to be used for project purposes shall be
6 borne by the project from amounts made available pursuant
7 to section 101. Existing roads may be used for overland
8 access to carry out such rehabilitation.

9 (2) The costs of stabilizing each of the lakes referred to
10 in subsection (a) which is to be used for a purpose other than
11 irrigation shall be treated as an expense under section 8.

12 (c) FISH AND WILDLIFE HABITAT.—Of the amounts
13 authorized to be appropriated by section 101, \$5,000,000
14 shall be available only for stabilization and fish and wildlife
15 habitat restoration in the lakes referred to in subsection (a).
16 This amount shall be in addition to the \$7,538,000 previous-
17 ly authorized for appropriation under section 5 of the Act of
18 April 11, 1956 (43 U.S.C. 620g), for the stabilization and
19 rehabilitation of the lakes described in this section.

20 SEC. 209. STREAM ACCESS AND RIPARIAN HABITAT DEVELOP-
21 MENT.

22 (a) IN GENERAL.—Of the amounts authorized to be ap-
23 propriated by section 101, the following amounts shall be in
24 addition to amounts available under the 1988 Definite Plan

1 Report and shall be available only for stream access and ri-
2 parian habitat development in the State—

3 (1) \$750,000 for rehabilitation of the Provo River
4 riparian habitat development between Jordanelle Res-
5 ervoir and Utah Lake;

6 (2) \$250,000 for rehabilitation and development of
7 watersheds and riparian habitats along Diamond Fork
8 and Sixth Water Creek;

9 (3) \$350,000 for additional watershed stabiliza-
10 tion, terrestrial wildlife and riparian habitat improve-
11 ments, and road closures within the Central Utah
12 Project area; and

13 (4) \$8,500,000 for the acquisition of additional
14 recreation and angler accesses and riparian habitats,
15 which accesses and habitats shall be acquired in ac-
16 cordance with the recommendation of the Commission.

17 (b) STUDY OF IMPACT TO WILDLIFE AND RIPARIAN
18 HABITATS WHICH EXPERIENCE REDUCED WATER FLOWS
19 AS A RESULT OF THE STRAWBERRY COLLECTION
20 SYSTEM.—Of the amounts authorized to be appropriated by
21 section 101, \$400,000 shall be available only for the Com-
22 mission to conduct a study of the impacts to soils and riparian
23 fish and wildlife habitat in drainages that will experience sub-
24 stantially reduced water flows resulting from the operation of
25 the Strawberry Collection System. The study shall identify

1 mitigation opportunities that represent alternatives to in-
2 creasing stream flows and make recommendations to the
3 Commission.

4 SEC. 210. SECTION 8 EXPENSES.

5 (a) Unless otherwise expressly provided, all of the
6 amounts authorized to be appropriated by this Act and listed
7 in subsection (b) of this section shall be treated as expenses
8 under section 8.

9 (b) The sections referred to in subsection (a) of this sec-
10 tion are as follows: title II, and 302(b)(2).

11 SEC. 211. JORDAN AND PROVO RIVER PARKWAYS AND NATU-
12 RAL AREAS.

13 (a) FISHERIES.—Of the amounts authorized to be ap-
14 propriated by section 101, \$1,150,000 shall be available only
15 for fish habitat improvements to the Jordan River.

16 (b) RIPARIAN HABITAT REHABILITATION.—Of the
17 amounts authorized to be appropriated by section 101,
18 \$750,000 shall be available only for Jordan River riparian
19 habitat rehabilitation, which amount shall be in addition to
20 amounts available under the 1988 Definite Plan Report.

21 (c) WETLANDS.—Of the amounts authorized to be ap-
22 propriated by section 101, \$7,000,000 shall be available only
23 for the acquisition of wetland acreages, including those along
24 the Jordan River identified by the multiagency technical

1 committee for the Jordan River Wetlands Advance Identifi-
2 cation Study.

3 (d) RECREATIONAL FACILITIES.—Of the amounts au-
4 thorized to be appropriated by section 101, \$1,000,000 shall
5 be available only to construct recreational facilities proposed
6 by the State of Utah for the "Jordan River Parkway", a
7 description of which is set forth in the report to accompany
8 the bill H.R. 3960 (H. Rept. 101-).

9 (e) PROVO RIVER CORRIDOR.—Of the amounts author-
10 ized to be appropriated by section 101, \$1,000,000 shall be
11 available only for riparian habitat acquisition and preserva-
12 tion, stream habitat improvements, and recreation and angler
13 access provided on a willing seller basis along the Provo
14 River from the Murdock diversion to Utah Lake, as deter-
15 mined by the Commission after consultation with local
16 officials.

17 SEC. 212. RECREATION.

18 Of the amounts authorized to be appropriated by section
19 101, the following amounts shall be available to the Commis-
20 sion only for Central Utah Project recreation features—

21 (a) \$1,000,000 for Utah Lake recreational im-
22 provements as proposed by the State and local govern-
23 ments; and

24 (b) \$750,000 for additional recreation improve-
25 ments, which shall be made in accordance with recom-

1 mendations made by the Commission, associated with
2 Central Utah Project features and affected areas, in-
3 cluding camping facilities, hiking trails, and signing.

4 **SEC. 213. FISH AND WILDLIFE FEATURES IN THE COLORADO**
5 **RIVER STORAGE PROJECT.**

6 Of the amounts authorized to be appropriated by section
7 101, the following amounts shall be available only to provide
8 mitigation and restoration of watersheds and fish and wildlife
9 resources in Utah impacted by the Colorado River Storage
10 Project:

11 (a) **HABITAT IMPROVEMENTS IN CERTAIN DRAIN-**
12 **AGES.**—\$1,125,000 shall be available only for watershed
13 and fish and wildlife improvements in the Fremont River
14 drainage, which shall be expended in accordance with a plan
15 developed by the Commission in consultation with the Wayne
16 County Water Conservancy District.

17 (b) **SMALL DAMS AND WATERSHED IMPROVE-**
18 **MENTS.**—\$4,000,000 shall be available only for land acqui-
19 sition for the purposes of watershed restoration and protection
20 in the Albion Basin in the Wasatch Mountains and for resto-
21 ration and conservation related improvements to small dams
22 and watersheds on State of Utah lands and National Forest
23 System lands within the Central Utah Project and the Colo-
24 rado River Storage Project area in Utah, which amounts

1 shall be expended in accordance with a plan developed by the
2 Commission.

3 (c) FISH HATCHERY PRODUCTION.—\$22,800,000 shall
4 be available only for the planning and implementation of im-
5 provements to existing hatchery facilities or the construction
6 and development of new fish hatcheries to increase produc-
7 tion of warmwater and coldwater fishes for the areas affected
8 by the Colorado River Storage Project in Utah. Such im-
9 provements and construction shall be implemented in accord-
10 ance with a plan identifying the long-term needs and man-
11 agement objectives for hatchery production prepared by the
12 United States Fish and Wildlife Service, in consultation with
13 the Utah Division of Wildlife Resources, and adopted by the
14 Commission. The cost of operating and maintaining such new
15 or improved facilities shall be borne by the Secretary.

16 SEC. 214. CONCURRENT MITIGATION APPROPRIATIONS.

17 Amounts authorized in this Act may only be appropri-
18 ated in a manner which reflects project construction concur-
19 rent and proportionate with the implementation of the fish,
20 wildlife, and recreation mitigation and conservation schedule
21 prepared by the Interagency Biological Assessment Team
22 and specified in section 215.

1 SEC. 215. FISH, WILDLIFE, AND RECREATION MITIGATION

2 SCHEDULE.

3 The fish, wildlife, and recreation mitigation and conser-
4 vation schedule referred to in section 214 is identified as Ap-
5 pendix B in the report accompanying the bill H.R. 3960 (H.
6 Rept. 101-).

7 TITLE III—UTAH RECLAMATION MITIGATION

8 AND CONSERVATION ACCOUNT

9 SEC. 301. FINDINGS AND PURPOSE.

10 (a) FINDINGS.—The Congress finds that—

11 (1) the State of Utah is a State in which one of
12 the largest trans-basin water diversion occurs, dewater-
13 ing important natural areas as a result of the Colorado
14 River Storage Project;

15 (2) the State of Utah is one of the most ecologi-
16 cally significant states in the Nation, and it is therefore
17 important to protect, mitigate, and enhance sensitive
18 species and ecosystems through effective long-term
19 mitigation;

20 (3) the challenge of mitigating the environmental
21 consequences associated with transbasin water diver-
22 sions are complex and involve many projects and meas-
23 ures (some of which are presently unidentifiable) and
24 the costs for which will continue after projects of the
25 Colorado River Storage Project in Utah are completed;
26 and

1 (4) environmental mitigation associated with the
2 development of the projects of the Colorado River
3 Storage Project in the State of Utah are seriously in
4 arrears.

5 (b) PURPOSES.—The purpose of this title is to establish
6 an ongoing account to ensure that—

7 (1) the level of environmental protection, mitiga-
8 tion, and enhancement achieved in connection with
9 projects of the Colorado River Storage Project in the
10 State of Utah is preserved and maintained;

11 (2) resources are available to manage and main-
12 tain investments in fish and wildlife and recreation fea-
13 tures of the projects of the Colorado River Storage
14 Project in the State of Utah;

15 (3) resources are available to address known envi-
16 ronmental impacts of the projects of the Colorado
17 River Storage Project in the State of Utah for which
18 no funds are being specifically authorized for appropria-
19 tion and earmarked under this Act; and

20 (4) resources are available to address presently
21 unknown environmental needs and opportunities for
22 enhancement within the areas of the State of Utah af-
23 fected by the projects of the Colorado River Storage
24 Project.

1 SEC. 302. UTAH RECLAMATION MITIGATION AND CONSERVA-
2 TION ACCOUNT.

3 (a) ESTABLISHMENT.—There is hereby established in
4 the Treasury of the United States a Utah Reclamation Miti-
5 gation and Conservation Account (hereafter in this title re-
6 ferred to as the "Account"). Amounts in the Account shall be
7 available for the purposes set forth in section 301(b).

8 (b) DEPOSITS INTO THE ACCOUNT.—Amounts shall be
9 deposited into the Account as follows:

10 (1) STATE CONTRIBUTIONS.—In each of fiscal
11 years 1992 through 1999, or when the project is de-
12 clared substantially complete, whichever occurs first, a
13 voluntary contribution of \$3,000,000 from the State of
14 Utah.

15 (2) FEDERAL CONTRIBUTIONS.—In each of fiscal
16 years 1992 through 1999, or when the project is de-
17 clared substantially complete, whichever occurs first,
18 \$5,000,000 from amounts authorized to be appropri-
19 ated by section 101, which shall be treated as an ex-
20 pense under section 8.

21 (3) CONTRIBUTIONS FROM PROJECT BENEFICI-
22 ARIES.—(A) In each of fiscal years 1992 through
23 1999, or when the project is declared substantially
24 complete in accordance with this Act, whichever
25 occurs first, a voluntary contribution of \$750,000 in
26 non-Federal funds from the District.

1 (B) \$5,000,000 annually out of the revenues paid
2 each year to the general fund of the Treasury from re-
3 cepts from power contractors within the State of Utah
4 for the sale of electric power and energy from the Col-
5 orado River Storage Project which amount shall be
6 made available without further appropriation for ex-
7 penditure from the Account: *Provided*, That such
8 amount, to the extent deposited in the Account, shall
9 be treated as having repaid and returned to the general
10 fund of the Treasury costs assigned to power for repay-
11 ment under section 5 of the Act of April 11, 1956 (70
12 Stat. 107; 43 U.S.C. 620d): *Provided further*, That in
13 the event power revenues deposited in the Basin Fund
14 are insufficient after first meeting annual operating
15 needs to make the payment provided for under this
16 subsection, payment to the Account shall be deferred
17 until sufficient funds are available.

18 (C) The annual contribution described in subpara-
19 graphs (A) and (B) shall be increased proportionally on
20 March 1 of each year by the same percentage increase
21 during the previous calendar year in the Consumer
22 Price Index for urban consumers, published by the De-
23 partment of Labor.

24 (4) INTEREST AND UNEXPENDED FUNDS.—(A)
25 Any amount authorized and earmarked for fish and

1 wildlife and recreation expenditures which is appropri-
2 ated but not obligated or expended by the Commission
3 upon its termination under section 201.

4 (B) All funds annually appropriated to the Com-
5 mission.

6 (C) All interest earned on amounts in the Account
7 which, until the date on which the Commission termi-
8 nates under section 201, shall be added to and become
9 part of the principal of the Account.

10 (D) Amounts not obligated or expended after the
11 completion of a construction project and available pur-
12 suant to section 201(j).

13 (c) OPERATION OF THE ACCOUNT.—(1) All moneys re-
14 ceived by the Account which are not currently needed shall
15 be invested in accordance with paragraph (4).

16 (2) The Commission is authorized to administer and
17 expend all sums deposited into the Account pursuant to sub-
18 sections (b)(4)(D), (b)(3)(A), and (b)(3)(B). The Commission
19 may elect to deposit funds not expended under subsections
20 (b)(4)(D), (b)(3)(A), and (b)(3)(B) into the Account as
21 principal.

22 (3) All amounts deposited in the Account pursuant to
23 subsections (b)(1) and (2), and any amount deposited as prin-
24 cipal under paragraph (2), shall constitute the principal of the

1 Account. No part of the principal amount may be expended
2 for any purpose.

3 (4) The Secretary, in consultation with the Governor,
4 shall establish requirements for the investment of all amounts
5 received by the account under subsection (c). Such require-
6 ments shall ensure that such amounts are invested with
7 sound investment principles and shall ensure that persons
8 managing such investments exercise their fiduciary responsi-
9 bilities in an appropriate manner.

10 (d) ADMINISTRATION BY THE UTAH DIVISION OF
11 WILDLIFE RESOURCES.—(1) After the date on which the
12 Commission terminates under section 201, the Utah Division
13 of Wildlife Resources shall receive—

14 (A) all amounts contributed annually to the Ac-
15 count pursuant to section 302(b)(3)(B); and

16 (B) all interest on the principal of the Account, at
17 the beginning of each year. The portion of the interest
18 earned on the principal of the account that exceeds the
19 amount required to increase the principal of the ac-
20 count proportionally on March 1 of each year by the
21 percentage increase during the previous calendar year
22 in the Consumer Price Index for urban consumers pub-
23 lished by the Department of Labor, shall be available
24 for expenditure by the Division in accordance with this
25 section.

1 (2) The funds received by the Utah Division of Wildlife
2 Resources under paragraph (1) shall be expended in a manner
3 that fulfills the purposes of the Account established under this
4 Act, in consultation with and pursuant to, a conservation
5 plan to be developed by the Utah Division of Wildlife Re-
6 sources, in cooperation with the Forest Service, the Bureau
7 of Land Management of the Department of Interior, and the
8 United States Fish and Wildlife Service.

9 (3) The funds to be distributed from the Account shall
10 not be applied as a substitute for funding which would other-
11 wise be provided or available to the Utah Division of Wildlife
12 Resources.

13 **TITLE IV—UTE INDIAN RIGHTS SETTLEMENT**

14 **SEC. 401. FINDINGS.**

15 (a) **FINDINGS.**—The Congress finds the following:

16 (1) The unquantified Federal reserved water
17 rights of the Ute Indian Tribe are the subject of exist-
18 ing claims and prospective lawsuits involving the
19 United States, the State, and the District and numer-
20 ous other water users in the Uinta Basin. The State
21 and the Tribe negotiated, but did not implement, a
22 compact to quantify the Tribe's reserved water rights.

23 (2) There are other unresolved Tribal claims aris-
24 ing out of an agreement dated September 20, 1965,
25 where the Tribe deferred development of a portion of

1 its reserved water rights for 15,242 acres of the
2 Tribe's Group 5 Lands in order to facilitate the con-
3 struction of the Bonneville Unit of the Central Utah
4 Project. In exchange the United States undertook to
5 develop substitute water for the benefit of the Tribe.

6 (3) It was intended that the Central Utah Project,
7 through construction of the Upalco and Uintah units
8 (Initial Phase) and the Ute Indian Unit (Ultimate
9 Phase) would provide water for growth in the Uinta
10 Basin and for late season irrigation for both the Indi-
11 ans and non-Indian water users. However, construction
12 of the Upalco and Uintah Units has not been undertak-
13 en, in part because the Bureau was unable to find ade-
14 quate and economically feasible reservoir sites. The
15 UTE Indian unit has not been authorized by Congress,
16 and there is no present intent to proceed with Ultimate
17 Phase Construction.

18 (4) Without the implementation of the plans to
19 construct additional storage in the Uinta Basin, the
20 water users (both Indian and non-Indian) continue to
21 suffer water shortages and resulting economic decline.

22 (b) PURPOSE.—This Act and the proposed Revised Ute
23 Indian Compact of 1990 are intended to—

24 (1) quantify the Tribe's reserved water rights;

1 (2) allow increased beneficial use of such water;
2 and

3 (3) put the Tribe in the same economic position it
4 would have enjoyed had the features contemplated by
5 the September 20, 1965 Agreement been constructed.

6 SEC. 402. PROVISIONS FOR PAYMENT TO THE UTE INDIAN
7 TRIBE.

8 (a) BONNEVILLE UNIT TRIBAL CREDITS.—(1) Com-
9 mencing on July 1, 1991, and continuing for fifty years, the
10 Tribe shall receive from the United States 26 percent of the
11 annual Bonneville Unit municipal and industrial capital re-
12 payment obligation attributable to 35,500 acre-feet of water,
13 which represents a portion of the Tribe's water rights that
14 were to be supplied by storage from the Central Utah
15 Project, but will not be supplied because the Upalco and
16 Uintah units are not to be constructed.

17 (2)(A) Commencing in the year 2042, the Tribe shall
18 collect from the District 7 percent of the then fair market
19 value of 35,500 acre-feet of Bonneville Unit agricultural
20 water which has been converted to municipal and industrial
21 water. The fair market value of such water shall be recalcu-
22 lated every five years.

23 (B) In the event 35,500 acre-feet of Bonneville Unit
24 converted agricultural water to municipal and industrial have
25 not yet been marketed as of the year 2042, the Tribe shall

1 receive 7 percent of the fair market value of the 35,500 acre-
2 feet of such water converted to municipal and industrial
3 water.

4 (b) BONNEVILLE UNIT TRIBAL WATERS.—The Secre-
5 tary is authorized to make any unused capacity in the Bonne-
6 ville Unit Strawberry Aqueduct and Collection System diver-
7 sion facilities available for use by the Tribe. Unused capacity
8 shall constitute capacity, only as available, in excess of the
9 needs of the District for delivery of Bonneville Unit water
10 and for satisfaction of minimum streamflow obligations estab-
11 lished by this Act. In the event that the Tribe elects to place
12 water in these components of the Bonneville Unit system, the
13 Secretary and District shall only impose an operation and
14 maintenace charge. Such charge shall commence at the time
15 of the Tribe's use of such facilities. The operation and main-
16 tenance charge shall be prorated on a per acre-foot basis, but
17 shall only include the operation and maintenance costs of fa-
18 cilities used by the Tribe and shall only apply when the Tribe
19 elects to use the facilities. As provided in the Ute Indian
20 Compact, transfers of certain Indian reserved rights water to
21 different lands or different uses will be made in accordance
22 with the laws of the State of Utah governing change or ex-
23 change applications.

24 (c) ELECTION TO RETURN TRIBAL WATERS.—Not-
25 withstanding the authorization provided for in subparagraph

1 (b), the Tribe may at any time elect to return all or a portion
2 of the water which it delivered under subparagraph (b) for
3 use in the Uinta Basin. Any such Uinta Basin use shall pro-
4 tect the rights of non-Indian water users existing at the time
5 of the election. Upon such election, the Tribe will relinquish
6 any and all rights which it may have acquired to transport
7 such water through the Bonneville Unit facilities.

8 **SEC. 403. TRIBAL USE OF WATER.**

9 (a) **UTE INDIAN COMPACT.**—Consent is hereby given
10 to the Tribe to enter into a compact reserving waters to the
11 Tribe, and establishing the uses and management of such
12 Tribal waters subject to re-ratification by the State and the
13 Tribe.

14 (b) **THE INDIAN INTERCOURSE ACT.**—The provisions
15 of section 2116 of the Revised Statutes (25 U.S.C. 177) shall
16 not apply to any water rights confirmed in the Compact.
17 Nothing in this subsection shall be considered to amend, con-
18 strue, supersede or preempt any State law, Federal law,
19 interstate compact or international treaty that pertains to the
20 Colorado River or its tributaries, including the appropriation,
21 use, development and storage, regulation, allocation, conser-
22 vation, exportation or quality of those waters.

23 **SEC. 404. TRIBAL FARMING OPERATIONS.**

24 \$45,000,000 is authorized for the Secretary to permit
25 the Tribe to develop over a three-year period—

1 (1) a 7,500 acre farming/feed lot operation
2 equipped with satisfactory off-farm and on-farm water
3 facilities out of tribally-owned lands and adjoining non-
4 Indian lands now served by the Uintah Indian Irriga-
5 tion Project;

6 (2) a plan to reduce the Tribe's expense on the
7 remaining sixteen thousand acres of tribal land now
8 served by the Uintah Indian Irrigation Project; and

9 (3) a fund to permit tribal members to upgrade
10 their individual farming operations.

11 Any non-Indian lands acquired under this section shall not be
12 added to the reservation of the Tribe.

13 SEC. 405. RESERVOIR, STREAM, HABITAT AND ROAD IM-
14 PROVEMENTS WITH RESPECT TO THE UTE
15 INDIAN RESERVATION.

16 (a) REPAIR OF CEDARVIEW RESERVOIR.— \$5,000,000
17 is authorized to permit the Secretary to repair the leak in
18 Cedarview Reservoir in Dark Canyon, Duchesne County,
19 Utah, so that the resultant surface area of the reservoir is
20 two hundred and ten acres.

21 (b) RESERVATION STREAM IMPROVEMENTS.—
22 \$10,000,000 is authorized for the Commission, in consulta-
23 tion with the Tribe, to undertake stream improvements to not
24 less than 53 linear miles (not counting meanders) for the Pole
25 Creek, Rock Creek, Yellowstone River, Lake Fort River,

1 Uinta River, and Whiterocks River, in the State of Utah.
2 Nothing in this authorization shall increase the obligation of
3 the District to deliver more than 44,400 acre-feet of Central
4 Utah Project water as its contribution to the preservation of
5 minimum stream flows in the Uinta Basin.

6 (c) BOTTLE HOLLOW RESERVOIR.—\$500,000 in an
7 initial appropriation is authorized to permit the Secretary to
8 clean the Bottle Hollow Reservoir on the Ute Indian Reser-
9 vation of debris and trash resulting from a submerged sani-
10 tary landfill, to remove all nongame fish, and to secure mini-
11 mum flow of water to the reservoir to make it a suitable
12 habitat for a cold water fishery. The United States, and not
13 the Tribe, shall be responsible for cleanup and all other re-
14 sponsibilities relating to the presently contaminated Bottle
15 Hollow waters.

16 (d) MINIMUM STREAM FLOWS.—As a minimum, the
17 Secretary shall endeavor to maintain continuous releases
18 from the outlet works of the Upper Stillwater Dam into Rock
19 Creek of 29 cubic feet per second during May through Octo-
20 ber and continuous releases into Rock Creek of 23 cubic feet
21 per second during November through April. Nothing in this
22 authorization shall increase the obligation of the District to
23 deliver more than 44,400 acre-feet of Central Utah Project
24 water as its contribution to the preservation of minimum
25 stream flow in the Uinta Basin. Water may not be withheld

1 for additional storage in Upper Stillwater Reservoir at any
2 time when such withholding would result in the stream flow
3 in Rock Creek at the outlet works of the Upper Stillwater
4 Dam falling below those specified minimum flows, and water
5 already in storage will be released for such purpose, so long
6 as such releases do not require the Central Utah Project to
7 provide a total of 44,400 acre-feet per year of Central Utah
8 Project water for such purposes in all streams.

9 (e) **LAND TRANSFER.**—The Bureau shall transfer 315
10 acres of land to the Forest Service, located at the proposed
11 site of the Lower Stillwater Reservoir as a wildlife mitigation
12 measure.

13 (f) **RECREATION ENHANCEMENT.**—\$10,000,000 is au-
14 thorized for the Secretary, in consultation with the Commis-
15 sion, to permit the Tribe to develop big game hunting, fisher-
16 ies, campgrounds and fish and wildlife management facilities,
17 including administration buildings and grounds on the Uintah
18 and Ouray Reservation, in lieu of the construction of the
19 Lower Stillwater Dam and related facilities.

20 **SEC. 406. TRIBAL DEVELOPMENT FUNDS.**

21 (a) **ESTABLISHMENT.**—There is hereby established to
22 be appropriated a total amount of \$125,000,000 to be paid in
23 three annual and equal installments to the Tribal Develop-
24 ment Fund which the Secretary is authorized and directed to
25 establish for the Tribe.

1 (b) ADJUSTMENT.—To the extent that any portion of
2 such amount is contributed after the period described above
3 or in amounts less than described above, the Tribe shall, sub-
4 ject to appropriation Acts, receive, in addition to the full con-
5 tribution to the Tribal Development Fund, an adjustment
6 representing the interest income as determined by the Secre-
7 tary, in his sole discretion, that would have been earned on
8 any unpaid amount.

9 (c) TRIBAL DEVELOPMENT.—The Tribe shall prepare a
10 Tribal Development Plan for all or a part of this Tribal De-
11 velopment Fund. Such Tribal Development Fund shall set
12 forth from time to time economic projects proposed by the
13 Tribe which in the opinion of two independent financial con-
14 sultants are deemed to be reasonable, prudent and likely to
15 return a reasonable investment to the Tribe. The financial
16 consultants shall be selected by the Tribe with the advice and
17 consent of the Secretary. Principal from the Tribal Develop-
18 ment Fund shall be permitted to be expended only in those
19 cases where the Tribal Development Plan can demonstrate
20 with specificity a compelling need to utilize principal in addi-
21 tion to income for the Tribal Development Plan.

22 SEC. 407. WAIVER OF CLAIMS.

23 (a) GENERAL AUTHORITY.—The Tribe is authorized to
24 waive and release claims concerning or related to water
25 rights as described below.

1 (b) DESCRIPTION OF CLAIMS.—As a condition to the
2 receipt of the moneys described in sections 402 and 406, the
3 Tribe shall waive, upon receipt of the section 406 moneys,
4 any and all claims relating to its water rights covered under
5 the agreement of September 20, 1965, including claims by
6 the Tribe that it retains the right to develop lands as set forth
7 in the Ute Indian Compact and deferred in such agreement.
8 Nothing in this waiver of claims shall prevent the Tribe from
9 enforcing rights granted to it under this Act or under the
10 Compact. To the extent necessary to effect a complete re-
11 lease of the claims, the United States concurs in such release.

12 (c) RESURRECTION OF CLAIMS.—In the event the
13 Tribe does not receive on a timely basis the moneys described
14 in section 402, the Tribe is authorized to bring an action for
15 an accounting against the United States, if applicable, in the
16 United States Claims Court for moneys owed plus interest at
17 10 percent, and against the District, if applicable, in the
18 United States District Court for the District of Utah for
19 moneys owed plus interest at 10 percent. The United States
20 and the District waive any defense based upon sovereign im-
21 munity in such proceeding.

1 TITLE V—SHORT TITLE AND DEFINITION

2 SEC. 501. SHORT TITLE.

3 Titles V through XXIV of this Act may be cited as the
4 “Reclamation Projects Authorization and Adjustment Act of
5 1990”.

6 SEC. 502. DEFINITION OF “SECRETARY”.

7 For purposes of titles V through XXIV of this Act, the
8 term “Secretary” means the Secretary of the Interior.

9 TITLE VI—BUFFALO BILL DAM AND RESERVOIR,
10 WYOMING

11 SEC. 601. ADDITIONAL AUTHORIZATION OF APPROPRIATIONS.

12 Title I of Public Law 97-293 (96 Stat. 1261) is amend-
13 ed as follows:

14 (1) In the second sentence of section 101, by
15 striking “replacing the existing Shoshone Powerplant,”
16 and inserting “constructing power generating facilities
17 with a total installed capacity of 25.5 megawatts,”.

18 (2) In section 102—

19 (A) by amending the heading to read as fol-
20 lows: “recreational facilities, conservation, and
21 fish and wildlife”; and

22 (B) by adding at the end the following: “The
23 construction of recreational facilities in excess of
24 the amount required to replace or relocate exist-
25 ing facilities is authorized, and the costs of such

1 construction shall be borne equally by the United
2 States and the State of Wyoming pursuant to the
3 Federal Water Project Recreation Act.”.

4 (3) In section 106(a)—

5 (A) by striking “for construction of the Buf-
6 falo Bill Dam and Reservoir modifications the
7 sum of \$106,700,000 (October 1982 price levels)”
8 and inserting “for the Federal share of the con-
9 struction of the Buffalo Bill Dam and Reservoir
10 modifications and recreational facilities the sum of
11 \$80,000,000 (October 1988 price levels)”;

12 (B) by striking “modifications” and all that
13 follows and inserting “modifications.”.

14 TITLE VII—TREATMENT OF DRAINAGE FROM
15 THE LEADVILLE MINE DRAINAGE TUNNEL,
16 COLORADO

17 SEC. 701. AUTHORIZATION OF CONSTRUCTION, OPERATION,
18 AND MAINTENANCE.

19 In order that water flowing from the Leadville Mine
20 Drainage Tunnel, Colorado, shall meet water quality stand-
21 ards, the Secretary is authorized, subject to the provisions of
22 section 704 of this title, to—

23 (a) design, construct, operate and maintain a
24 water treatment plant, including the disposal of sludge

1 produced by such a treatment plant, as appropriate;
2 and

3 (b) install concrete lining on the rehabilitated por-
4 tion of the Leadville Mine Drainage Tunnel.

5 **SEC. 702. DESIGN.**

6 The treatment plant authorized by section 701 shall be
7 designed and constructed to treat the quantity and quality of
8 effluent historically discharged from the Leadville Mine
9 Drainage Tunnel, and to meet requirements of the Clean
10 Water Act.

11 **SEC. 703. TREATMENT OF COSTS.**

12 Design, construction, and operation and maintenance
13 costs of the works authorized by section 701 shall be non-
14 reimbursable.

15 **SEC. 704. DESIGN AND OPERATION NOTIFICATION.**

16 Prior to the initiation of construction and during con-
17 struction of the works authorized by section 701, the Secre-
18 tary shall submit the plans for design and operation of the
19 works to the Administrator of the Environmental Protection
20 Agency, and the State of Colorado to obtain their views on
21 the design and operation plans. After such review and consul-
22 tation, the Secretary shall notify the Speaker of the House of
23 Representatives and the President pro tempore of the Senate
24 that the discharge from the works to be constructed will meet
25 the requirements set forth in Federal Facilities Compliance

1 Agreement Number FFCA-89-1, entered into by the
2 Bureau of Reclamation and the Environmental Protection
3 Agency on February 7, 1989, and in National Pollutant Dis-
4 charge Elimination System Number CO-0021717 issued to
5 the Bureau of Reclamation in 1975 and reissued in 1979 and
6 1981.

7 **SEC. 705. OPERATION AND MAINTENANCE.**

8 The Secretary shall be responsible for operation, main-
9 tenance, and replacement of the water treatment plant, in-
10 cluding sludge disposal authorized by this title. The Secre-
11 tary may carry out the responsibilities of this section by
12 contract.

13 **SEC. 706. RESTORATION OF FISH AND WILDLIFE RESOURCES.**

14 (a) **AUTHORIZATION.**—The Secretary is authorized, in
15 consultation with the State of Colorado, to formulate and im-
16 plement, subject to the provisions of subsection (b) of this
17 section, a program for the restoration of fish and wildlife re-
18 sources of those portions of the Arkansas River Basin im-
19 pacted by the effluent discharged from the Leadville Mine
20 Drainage Tunnel. The formulation of the program shall be
21 undertaken with appropriate public consultation.

22 (b) **NOTIFICATION TO THE CONGRESS.**—Prior to im-
23 plementing the program, the Secretary shall submit a copy of
24 the proposed restoration program to the Speaker of the

1 House of Representatives and the President pro tempore of
2 the Senate for a period of not to exceed sixty days.

3 SEC. 707. UPPER ARKANSAS RIVER BASIN WATER QUALITY
4 RESTORATION INITIATIVE.

5 (a) AUTHORIZATION.—The Secretary of the Interior is
6 authorized, in consultation with the State of Colorado, the
7 Environmental Protection Agency, and other Federal enti-
8 ties, to conduct investigations of water pollution sources and
9 impacts attributed to mining related and other development
10 in the Upper Arkansas River Basin, to develop corrective
11 action plans, and to implement corrective action demonstra-
12 tion projects. The Secretary of the Interior shall have no
13 authority under this section at facilities or units which are
14 subject to or covered by the Resource Conservation and Re-
15 covery Act or the Comprehensive Environmental Response,
16 Compensation, and Liability Act of 1980.

17 (b) UPPER ARKANSAS RIVER BASIN.—For the pur-
18 poses of subsection (a), the Upper Arkansas River Basin
19 means the hydrologic basin in the Arkansas River in Colora-
20 do extending from Pueblo Dam (a United States Bureau of
21 Reclamation facility) upstream to its headwaters.

22 (c) PUBLIC INVOLVEMENT.—The development of all
23 corrective action plans and subsequent corrective action dem-
24 onstration projects shall be undertaken with appropriate
25 public involvement pursuant to a public participation plan,

1 consistent with regulations promulgated under the Federal
2 Water Pollution Control Act, developed by the Secretary in
3 consultation with the State of Colorado and the Environmen-
4 tal Protection Agency.

5 (d) UTILIZATION OF NON-FEDERAL FUNDS AND SERV-
6 ICES.—The Secretary shall arrange for cost sharing with the
7 State of Colorado and for the utilization of non-Federal funds
8 and in-kind services where possible. The Federal share of
9 costs for the activities authorized in subsection (a) of this sec-
10 tion shall be limited to 50 per centum.

11 (e) SUBMISSION OF PLANS TO CONGRESS.—Prior to
12 implementing any corrective action demonstration project,
13 the Secretary shall submit a copy of the proposed project
14 plans to the Speaker of the House of Representatives and the
15 President pro tempore of the Senate.

16 (f) CERCLA.—Nothing in this title affects or modifies,
17 in any way, the obligations or liabilities of any person under
18 other Federal or State law, including common law, with re-
19 spect to the discharge or release of hazardous substances,
20 pollutants, or contaminants, as defined under section 101 of
21 the Comprehensive Environmental Response, Compensation,
22 and Liability Act (42 U.S.C. 9601).

23 SEC. 708. AUTHORIZATION OF APPROPRIATIONS.

24 There is authorized to be appropriated to carry out the
25 activities specified in sections 701 through 707 of this title,

1 the sum of \$20,000,000 (based upon January 1989 prices).
2 There are also authorized to be appropriated such additional
3 sums as may be required for operation and maintenance of
4 the works authorized by sections 701 and 707(a) of this title.

5 TITLE VIII—LAKE MEREDITH SALINITY

6 CONTROL PROJECT

7 SEC. 801. AUTHORIZATION TO CONSTRUCT AND TEST.

8 The Secretary is authorized to construct and test the
9 Lake Meredith Salinity Control Project, New Mexico and
10 Texas, in accordance with the Federal Reclamation laws
11 (Act of June 17, 1902, 32 Stat. 788, and Acts amendatory
12 thereof or supplementary thereto) and the provisions of this
13 title and the plan set out in the June 1985 Technical Report
14 of the Bureau of Reclamation on this project with such modi-
15 fication of, omissions from, or additions to the works, as the
16 Secretary may find proper and necessary for the purpose of
17 improving the quality of water delivered to the Canadian
18 River downstream of Ute Reservoir, New Mexico, and enter-
19 ing Lake Meredith, Texas. The principal features of the
20 project shall consist of production wells, observation wells,
21 pipelines, pumping plants, brine disposal facilities, and other
22 appurtenant facilities.

1 SEC. 802. CONSTRUCTION CONTRACT WITH THE CANADIAN
2 RIVER MUNICIPAL WATER AUTHORITY.

3 (a) AUTHORITY TO CONTRACT.—The Secretary is au-
4 thorized to enter into a contract with the Canadian River
5 Municipal Water Authority of Texas (hereafter in this title
6 the "Authority") for the design and construction manage-
7 ment of project facilities by the Bureau of Reclamation and
8 for the payment of construction costs by the Authority. Oper-
9 ation and maintenance of project facilities upon completion of
10 construction and testing shall be the responsibility of the
11 Authority.

12 (b) CONSTRUCTION CONTINGENT ON CONTRACT.—
13 Construction of the project shall not be commenced until a
14 contract has been executed by the Secretary with the Au-
15 thority, and the State of New Mexico has granted the neces-
16 sary permits for the project facilities.

17 SEC. 803. PROJECT COSTS.

18 (a) CANADIAN RIVER MUNICIPAL WATER AUTHORITY
19 SHARE.—All costs of construction of project facilities shall
20 be advanced by the Authority as non-Federal contribution
21 toward implementation of this title. Pursuant to the terms of
22 the contract authorized by section 802 of this title, these
23 funds shall be advanced on a schedule mutually acceptable to
24 the Authority and the Secretary, as necessary to meet the
25 expense of carrying out construction and land acquisition
26 activities.

1 (b) **FEDERAL SHARE.**—All project costs for design
2 preparation, and construction management shall be nonreim-
3 bursable as the Federal contribution for environmental en-
4 hancement by water quality improvement, except that the
5 Federal contribution shall not exceed 33 per centum of the
6 total project costs.

7 **SEC. 804. CONSTRUCTION AND CONTROL.**

8 (a) **PRECONSTRUCTION.**—The Secretary shall, upon en-
9 tering into the contract specified in section 802 with the Au-
10 thority, proceed with preconstruction planning, preparation of
11 designs and specifications, acquiring permits, acquisition of
12 land and rights, and award of construction contracts pending
13 availability of appropriated funds.

14 (b) **TERMINATION OF CONSTRUCTION.**—At any time
15 following the first advance of funds, the Authority may re-
16 quest that the Secretary terminate activities then in progress,
17 and such request shall be binding upon the Secretary, except
18 that, upon termination of construction pursuant to this sec-
19 tion, the Authority shall reimburse to the Secretary a sum
20 equal to 67 per centum of all costs incurred by the Secretary
21 in project verification, design and construction management,
22 reduced by any sums previously paid by the Authority to the
23 Secretary for such purposes. Upon such termination, the
24 United States is under no obligation to complete the project
25 as a nonreimbursable development.

1 (c) **TRANSFER OF CONTROL.**—Upon completion of con-
2 struction and testing of the project, or upon termination of
3 activities at the request of the Authority, the Secretary shall
4 transfer the care, operation, and maintenance of the project
5 works to the Authority or to a bona fide entity mutually
6 agreeable to the States of New Mexico and Texas. As part of
7 such transfer, the Secretary shall return unexpended balances
8 of the funds advanced, assign to the Authority or the bona
9 fide entity the rights to any contract in force, convey to the
10 Authority or the bona fide entity any real estate, easements
11 or personal property acquired by the advanced funds, and
12 provide any data, drawings, or other items of value procured
13 with advanced funds.

14 **SEC. 805. TRANSFER OF TITLE.**

15 Title to any facilities constructed under the authority of
16 this title shall remain with the United States.

17 **SEC. 806. AUTHORIZATION.**

18 There are hereby authorized to be appropriated such
19 sums as are necessary to carry out the provisions of this title,
20 except that the total Federal contribution to the cost of the
21 activities undertaken under the authority of this title shall not
22 exceed 33 per centum.

1 **TITLE IX—CEDAR BLUFF UNIT, KANSAS**

2 **SEC. 901. AUTHORIZATION OF REFORMULATION.**

3 The Secretary, consistent with the provisions of the
4 Memorandum of Understanding between the Bureau of Rec—
5 lamation and the Fish and Wildlife Service of the Depart-
6 ment of the Interior, the State of Kansas, and the Cedar
7 Bluff Irrigation District Number 6, dated December 17,
8 1987, is authorized to reformulate the Cedar Bluff Unit of
9 the Pick-Sloan Missouri Basin Program, Kansas, including
10 reallocation of the conservation capacity of the Cedar Bluff
11 Reservoir, to create—

12 (1) a designated operating pool, as defined in such
13 Memorandum of Understanding, for fish, wildlife, and
14 recreation purposes, for ground water recharge for en-
15 vironmental, domestic, municipal and industrial uses,
16 and for other purposes; and

17 (2) a joint-use pool, as defined in such Memoran-
18 dum of Understanding, for flood control, for water
19 sales, for fish, wildlife, and recreation purposes, and for
20 other purposes.

21 **SEC. 902. CONTRACT WITH THE STATE OF KANSAS FOR OPER-**
22 **ATING POOL.**

23 The Secretary may enter into a contract with the State
24 of Kansas for the sale, use and control of the designated op-
25 erating pool, with the exception of water reserved for the city

1 of Russell, Kansas, and to allow the State of Kansas to ac-
2 quire use and control of water in the joint-use pool, except
3 that, the State of Kansas shall not permit utilization of water
4 from Cedar Bluff Reservoir to irrigate lands in the Smoky
5 Hill River Basin from Cedar Bluff Reservoir to its confluence
6 with Big Creek.

7 SEC. 903. CONTRACT WITH THE STATE OF KANSAS FOR CEDAR
8 BLUFF DAM AND RESERVOIR.

9 (a) AUTHORIZATION.—The Secretary may enter into a
10 contract with the State of Kansas, accepting a payment of
11 \$350,000, and the State's commitment to pay a proportion-
12 ate share of the annual operation, maintenance, and replace-
13 ment charges for the Cedar Bluff Dam and Reservoir. After
14 the reformulation of the Cedar Bluff Unit authorized by this
15 title, all net revenues received by the United States from the
16 sale of water at the Cedar Bluff Unit shall be credited to the
17 Reclamation Fund.

18 (b) CONTRACT TERMINATION.—Upon receipt of the
19 payment specified in subsection (a), the Cedar Bluff Irrigation
20 District's obligations under contract number 0-07-70-
21 W0064 shall be terminated.

22 (c) TRANSFER OF FISH HATCHERY.—The Secretary
23 may transfer ownership of the buildings, fixtures, and equip-
24 ment of the United States Fish and Wildlife Service fish
25 hatchery facility at Cedar Bluff Dam, and the related water

1 rights, to the State of Kansas for its use and operation for
2 fish, wildlife, and related purposes. If any of the property
3 transferred by this subsection to the State of Kansas is subse-
4 quently transferred from State ownership or used for any pur-
5 pose other than those provided for in this subsection, title to
6 such property shall revert to the United States.

7 **SEC. 904. TRANSFER OF DISTRICT HEADQUARTERS.**

8 The Secretary may transfer title to all interests in real
9 property, buildings, fixtures, equipment, and tools associated
10 with the Cedar Bluff Irrigation District headquarters located
11 near Hays, Kansas, contingent upon the District's agreement
12 to close down the irrigation system to the satisfaction of the
13 Secretary at no additional cost to the United States, after
14 which all easement rights shall revert to the owners of the
15 lands to which the easements are attached. The transferee of
16 any interests conveyed pursuant to this section shall assume
17 all liability with respect to such interests and shall indemnify
18 the United States against all such liability.

19 **SEC. 905. ADDITIONAL ACTIONS.**

20 The Secretary may take all other actions consistent
21 with the provisions of the Memorandum of Understanding re-
22 ferred to in section 901 that the Secretary deems necessary
23 to accomplish the reformulation of the Cedar Bluff Unit.

1 **TITLE X—MISCELLANEOUS PROVISIONS,**
2 **CENTRAL VALLEY PROJECT, CALIFORNIA**
3 **SEC. 1001. EXTENSION OF THE TEHAMA-COLUSA CANAL SERV-**
4 **ICE AREA.**

5 The first paragraph of section 2 of the Act of September
6 26, 1950 (64 Stat. 1036), as amended by the Act of August
7 19, 1967 (81 Stat. 167), and the Act of December 22, 1980
8 (94 Stat. 3339), authorizing the Sacramento Valley Irriga-
9 tion Canals, Central Valley Project, California, is further
10 amended by striking: "Tehama, Glenn, and Colusa Counties,
11 and those portions of Yolo County within the boundaries of
12 the Colusa County, Dunnigan, and Yolo-Zamora water dis-
13 tricts or" and inserting in lieu thereof: "Tehama, Glenn, and
14 Colusa Counties, those portions of Yolo County within the
15 boundaries of the Colusa County Water District, Dunnigan
16 Water District, Yolo-Zamora Water District, and Yolo
17 County Flood Control and Water Conservation District, and
18 Solano County, or".

19 **SEC. 1002. AUTHORIZATION FOR LONG-TERM CONTRACT.**

20 (a) **GENERAL AUTHORITY.**—Notwithstanding the
21 Energy and Water Development Appropriations Act, 1990,
22 the Secretary is authorized, pursuant to section 203 of the
23 Flood Control Act of 1962 (76 Stat. 1191), to enter into a
24 long-term contract in accordance with Federal Reclamation
25 laws with the Toulumne Regional Water District, California,

1 for the delivery of water from the New Melones Unit, Central
 2 Valley Project, California, for the delivery of water from the
 3 New Melones project to the county's water distribution
 4 system.

5 (b) RECLAMATION LAWS.—For purposes of subsection
 6 (a), the term "Federal Reclamation laws" means the Act of
 7 June 17, 1902 (32 Stat. 388), and Acts supplementary there-
 8 to and amendatory thereof.

9 TITLE XI—SALTON SEA RESEARCH PROJECT

10 SEC. 1101. RESEARCH ON ENHANCED EVAPORATION SYSTEM
 11 FOR SALINE WATER.

12 The Secretary is authorized to conduct a research
 13 project for the development of an enhanced evaporation
 14 system for saline water treatment. The project shall be locat-
 15 ed in the area of the Salton Sea of Southern California.

16 SEC. 1102. COST-SHARING.

17 The non-Federal share of the cost of the research
 18 project referred to in section 1101 shall be 50 per centum of
 19 the total cost of the project.

20 SEC. 1103. REPORT.

21 Not later than September 30, 1995, the Secretary shall
 22 submit a report to the Committee on Interior and Insular
 23 Affairs of the House of Representatives and the Committee
 24 on Energy and Natural Resources of the Senate regarding
 25 the results of the research project referred to in section 1101.

1 SEC. 1104. AUTHORIZATION OF APPROPRIATIONS.

2 There is authorized to be appropriated \$10,000,000 to
3 carry out the provisions of this title.

4 TITLE XII—AMENDMENT TO SABINE RIVER
5 COMPACT

6 SEC. 1201. CONSENT TO AMENDMENT TO SABINE RIVER COM-
7 PACT.

8 The consent of Congress is given to the amendment,
9 described in section 1203, to the interstate compact, de-
10 scribed in section 1202, relating to the waters of the Sabine
11 River and its tributaries.

12 SEC. 1202. COMPACT DESCRIBED.

13 The compact referred to in the previous section is the
14 compact between the States of Texas and Louisiana, and
15 consented to by Congress in the Act of August 10, 1954
16 (Chapter 668; 68 Stat. 690; Public Law 85-78).

17 SEC. 1203. AMENDMENT.

18 The amendment referred to in section 1201 strikes
19 "One of the Louisiana members shall be ex officio the Direc-
20 tor of the Louisiana Department of Public Works; the other
21 Louisiana member shall be a resident of the Sabine Water-
22 shed and shall be appointed by the Governor of Louisiana for
23 a term of four years: *Provided*, That the first member so
24 appointed shall serve until June 30, 1958." in article VII(c)
25 and inserts "The Louisiana members shall be residents of the
26 Sabine Watershed and shall be appointed by the Governor for

1 a term of four years, which shall run concurrent with the
2 term of the Governor.”.

3 TITLE XIII—NAME CHANGE

4 SEC. 1301. DESIGNATION.

5 The Salt-Gila Aqueduct of the Central Arizona Project,
6 constructed, operated, and maintained under section
7 301(a)(7) of the Colorado River Basin Project Act (43 U.S.C.
8 1521(a)(7)), hereafter shall be known and designated as the
9 “Fannin-McFarland Aqueduct”.

10 SEC. 1302. REFERENCES.

11 Any reference in any law, regulation, document, record,
12 map, or other paper of the United States to the aqueduct
13 referred to in section 1301 hereby is deemed to be a refer-
14 ence to the “Fannin-McFarland Aqueduct”.

15 TITLE XIV—WARREN ACT AMENDMENTS

16 SEC. 1401. EXCESS STORAGE AND CARRYING CAPACITY.

17 The first sentence of the first section of the Act of Feb-
18 ruary 21, 1911 (43 U.S.C. 523; commonly known as the
19 “Warren Act”), is amended—

20 (a) by striking out “lands to be irrigated under
21 any project” and inserting in lieu thereof “water users
22 then entitled to the delivery of water from a Federal
23 reclamation project”;

24 (b) by striking out “lands and entrymen under the
25 project” and inserting in lieu thereof “users of the

1 Federal reclamation project, including fish and wildlife
2 purposes,"; and

3 (c) by inserting before the final period " , municipi-
4 pal, industrial, domestic, or miscellaneous purposes, in-
5 cluding fish and wildlife purposes".

6 TITLE XV—AMENDMENTS TO RECLAMATION

7 STATUTES

8 SEC. 1501. CONTRACT AMENDMENTS.

9 Subsection (h) of section 8 of the Reclamation Project
10 Act of 1939 (43 U.S.C. 485(h)) is amended to read as
11 follows:

12 "(h) If any classification or reclassification of irrigable
13 lands undertaken pursuant to this section results in an in-
14 crease in the outstanding construction charges or rate of re-
15 payment on any project, as established by an existing con-
16 tract with an organization, the Secretary shall amend the
17 contract to increase the construction obligation or the rate of
18 repayment. No other modification in outstanding construction
19 charges or repayment rates may be made by reason of a clas-
20 sification or reclassification undertaken pursuant to this sec-
21 tion without the approval of Congress."

22 SEC. 1502. AUTHORITY FOR APPROPRIATE PENALTIES.

23 Section 224 of the Reclamation Reform Act of 1982 (43
24 U.S.C. 390ww), as amended, is further amended by adding
25 at the end of subsection (c) the following: "Notwithstanding

1 any other provision of law, the Secretary shall establish ap-
2 propriate and effective penalties for failure to comply with
3 any provision of this Act or any regulation established pursu-
4 ant to this Act.”.

5 **TITLE XVI—WATER RECLAMATION AND REUSE**

6 **SEC. 1601. PARTICIPATION IN STUDY.**

7 The Secretary is authorized to participate with the city
8 of San Diego, California, in the conduct of a study of concep-
9 tual plans for water reclamation and reuse. The Federal
10 share of the cost of the study referred to in this section shall
11 not exceed 50 per centum of the total cost of the study.

12 **SEC. 1602. AUTHORIZATION OF APPROPRIATIONS.**

13 There is hereby authorized to be appropriated the sum
14 of \$250,000 to carry out the Federal share of the study spec-
15 ified in section 1601 of this title.

16 **TITLE XVII—MINE EFFLUENT FISHERY**

17 **SEC. 1701. ESTABLISHMENT OF FISHERY RESOURCES.**

18 (a) **AUTHORIZATION.**—The Secretary is authorized and
19 directed to conduct a feasibility study on establishing a Fed-
20 eral fish hatchery in McDowell County, West Virginia. Con-
21 ditioned upon the completion of the feasibility study and the
22 location of a suitable site and water supply, the Secretary is
23 authorized to construct a Federal fish hatchery as provided
24 for in the feasibility study. The study shall be undertaken by

1 the United States Fish and Wildlife Service in consultation
2 with the State of West Virginia.

3 (b) If a fish hatchery is constructed in McDowell
4 County, West Virginia, pursuant to section 1701(a), the fish
5 hatchery shall be known as the Carl R. Sullivan National
6 Fish Hatchery.

7 (c) AUTHORIZATION OF APPROPRIATIONS.—There is
8 hereby authorized to be appropriated the sum of \$2,500,000
9 to carry out the provisions of this title.

10 TITLE XVIII—MCGEE CREEK CONTRACT

11 ADJUSTMENT

12 SEC. 1801. CONTRACT ADJUSTMENT.

13 (a) AUTHORIZATION.—The Secretary is authorized and
14 directed to enter into a contract with the McGee Creek
15 Water Authority, Oklahoma City, Oklahoma, accepting a
16 payment of \$88,629,000.

17 (b) CONTRACT TERMINATION.—Upon receipt of the
18 payment specified in subsection (a), the McGee Creek Water
19 Authority's obligation under contract between the Authority
20 and the Secretary numbered 0-07-50-X0822, dated October
21 11, 1979 shall be terminated.

22 SEC. 1802. TITLE TO PROJECT FACILITIES.

23 Notwithstanding any payments made by the McGee
24 Creek Water Authority pursuant to section 1801(a) of this
25 title or pursuant to any contract with the Secretary, title to

1 project facilities of the McGee Creek Project, Oklahoma,
2 shall remain with the United States.

3 TITLE XIX—WATER AND POWER NEEDS OF
4 INSULAR AREAS

5 SEC. 1901. FINDINGS.

6 The Congress hereby finds and declares that assuring
7 adequate supplies of water, sewerage, and power for the resi-
8 dents of American Samoa, Guam, the Northern Mariana Is-
9 lands, Puerto Rico, and the Virgin Islands has become a
10 problem of such magnitude that the welfare and prosperity of
11 these jurisdictions require the Federal Government to assist
12 in finding permanent, long-term solutions to their water, sew-
13 erage, and power problems.

14 SEC. 1902. STUDY.

15 (a) AUTHORIZATION.—The Secretary, acting through
16 the Bureau of Reclamation, is authorized and directed to un-
17 dertake a comprehensive study of how the long-term water,
18 sewerage, and power needs of American Samoa, Guam, the
19 Northern Mariana Islands, Puerto Rico, and the Virgin Is-
20 lands can be resolved. Such study shall be conducted in con-
21 sultation with the governments of those islands. Such study
22 for each jurisdiction shall include, but not be limited to—

23 (1) an assessment of the magnitude and extent of
24 current and expected needs;

1 (2) an assessment of how the needs can be
2 resolved;

3 (3) the costs and benefits of alternative solutions;

4 (4) the need for additional legal authority for the
5 President to take actions to meet the needs; and

6 (5) specific recommendations for the role of the
7 Federal Government and each local government in
8 solving the long-term needs.

9 (b) **SUBMISSION OF THE REPORT.**—Not later than two
10 years after the date of enactment of this title, the Secretary
11 shall transmit the studies required by this section, together
12 with supporting documentation and recommendations of the
13 Secretary and the views of the governments of the islands
14 referred to in subsection (a), to the Committee on Interior
15 and Insular Affairs of the House of Representatives and the
16 Committee on Energy and Natural Resources of the Senate.

17 **SEC. 1903. AUTHORIZATION OF APPROPRIATIONS.**

18 There are authorized to be appropriated to the Secre-
19 tary, acting through the Bureau of Reclamation, through the
20 end of fiscal year 1994, such sums as may be necessary,
21 which are authorized to remain available until expended.

1 TITLE XX—RECLAMATION REFORM ACT
2 AMENDMENTS

3 SEC. 2001. SHORT TITLE AND DEFINITION.

4 (a) SHORT TITLE.—This title may be cited as the
5 “Reclamation Reform Act Amendments of 1990”.

6 (b) DEFINITION.—As used in this title, the term “the
7 Act” means the Reclamation Reform Act of 1982 (Public
8 Law 97–293, 96 Stat. 1263, 43 U.S.C. 390aa, et seq.).

9 SEC. 2002. NEW DEFINITION.

10 Section 202 of the Act is amended by adding the follow-
11 ing new definition, and renumbering the subsequent sections
12 accordingly:

13 “(3) The term ‘farm’ or ‘farm operation’ means
14 any landholding or group of landholdings, including
15 partial landholdings, directly or indirectly farmed or
16 operated by an individual, group, entity, trust, or any
17 other combination or arrangement. The existence of a
18 farm or farm operation will be presumed when owner-
19 ship, operation, management, financing or other fac-
20 tors, individually or together, indicate that one or more
21 landholdings, including partial landholdings, are direct-
22 ly or indirectly farmed or operated by the same individ-
23 ual, group, entity, trust, or other combination or ar-
24 rangement thereof: *Provided*, That the mere sharing of
25 labor, equipment or services by members of a family,

1 where such sharing is not part of any larger direct or
2 indirect joint operation or management, shall not by
3 itself initiate said presumption.”.

4 SEC. 2003. ADDITION OF FARM OR FARM OPERATION TO THE
5 ACT.

6 (a) The second sentence of section 203(b) of the Act is
7 amended by inserting after “landholding” wherever it ap-
8 pears, the following: “, farm, or farm operation”, and
9 inserting after “leased” wherever it appears the following:
10 “, farmed or operated”.

11 (b) Section 205 of the Act is amended by inserting after
12 “landholding” wherever it appears, the following: “, farm, or
13 farm operation”, and by inserting after “landholdings” the
14 following: “, farms or farm operations”.

15 SEC. 2004. TRUSTS.

16 Section 214(a) of the Act is amended by striking the
17 period and inserting at the end of the section the follow-
18 ing: “, except that such limitations shall apply to any trust,
19 trust beneficiary, and farm or farm operation operated by or
20 for such trustee for one or more beneficiaries. The provisions
21 of this section, as amended, shall be applicable to any trust
22 approved by the Secretary prior to June 14, 1990, to which
23 the Secretary has not already applied such ownership or pric-
24 ing limitations, one hundred and eighty days after the date of

1 enactment of this Act. In the case of all other trusts, such
2 limitations are immediately applicable.”.

3 **SEC. 2005. INTENT AND PURPOSES.**

4 Section 224(c) of the Act is amended to read as follows:

5 “(c) The Secretary is directed to prescribe regulations
6 and shall collect all data necessary to carry out the intent,
7 purposes, and provisions of this title and of other provisions
8 of Federal reclamation law.”.

9 **SEC. 2006. REPORTING REQUIREMENTS.**

10 (a) Section 228 of the Act is amended by inserting after
11 “contracting entity” wherever it appears, the following:
12 “, farm, or farm operation”.

13 (b) Section 206 of the Act is amended by inserting after
14 the final sentence the following: “This section shall also
15 apply to all landholdings, farms, or farm operations, to all
16 lands operated under any kind of operating agreement, and to
17 all operators thereof. The Secretary may also require the
18 submission of any agreement or other document relating to
19 the certification.”.

20 **SEC. 2007. RELIGIOUS OR CHARITABLE ORGANIZATIONS.**

21 Section 219 of the Act is amended by—

22 (a) inserting at the beginning “(a)”; and

23 (b) inserting the following new subsections:

24 “(b) The terms “farm” or “farm operation” shall not
25 apply to any landholding of a religious or charitable entity or

1 organization which qualifies as an individual under this sec-
2 tion. If an individual religious or charitable entity or organi-
3 zation holds land as a lessor within a district, it shall qualify
4 as an individual with respect to such lands: *Provided*, That
5 the entity or organization directly uses the proceeds of the
6 lease only for charitable purposes: *Provided further*, That the
7 lessee is eligible to receive reclamation water upon the leased
8 lands.

9 “(c) If an individual religious or charitable organization
10 holds lands within a district, but fails to qualify as an individ-
11 ual under this section, its lands within a district with regard
12 to which it does not qualify as an individual shall be lands
13 held in excess of the ownership limitations of section 209 of
14 this Act, and shall receive reclamation water only as excess
15 lands in compliance with the provisions of section 209 of this
16 Act. The failure of an individual religious or charitable entity
17 or organization to qualify as an individual under this section
18 shall not affect the qualification as an individual under this
19 section of another individual religious or charitable entity or
20 organization which is affiliated with the same central organi-
21 zation or is subject to a hierarchical authority of the same
22 faith.”.

1 SEC. 2008. RESTRICTION OF BENEFITS TO CITIZENS AND RESI-
2 DENT ALIENS.

3 (a) Section 202(7) of the Act is amended by striking the
4 period and inserting in lieu thereof the following: “: *Provided*,
5 That all such persons are citizens of the United States or
6 resident aliens thereof.”.

7 (b) Section 202(9) of the Act is amended by striking the
8 period and inserting in lieu thereof the following: “: *Provided*,
9 That all such persons are citizens of the United States or
10 resident aliens thereof.”.

11 TITLE XXI—COST OF IRRIGATION WATER

12 SEC. 2101. COST FOR DELIVERY OF WATER USED TO PRODUCE
13 THE CROPS OF CERTAIN AGRICULTURAL COM-
14 MODITIES.

15 Section 9 of the Reclamation Projects Act of 1939 (43
16 U.S.C. 485h) is amended by inserting at the end thereof the
17 following new subsection:

18 “(g)(1) All contracts entered into, renewed, or amended
19 under authority of this section or any other provision of Fed-
20 eral reclamation law after—

21 “(A) 2 years after the date of enactment of this
22 subsection shall require that the organization agree by
23 contract with the Secretary to pay at least 50 percent
24 of full cost for the delivery of water used in the pro-
25 duction of any crop of an agricultural commodity for
26 which an acreage reduction program is in effect under

1 the provisions of the Agricultural Act of 1949, if the
2 stocks of such commodity in Commodity Credit Corpo-
3 ration storage exceed an amount that the Secretary of
4 Agriculture determines is necessary to provide for a re-
5 serve of such commodity that can reasonably be ex-
6 pected to meet a shortage of such commodity caused
7 by drought, natural disaster, or other disruption in the
8 supply of such commodity, as determined by the Secre-
9 tary of Agriculture; and

10 “(B) 4 years after the date of enactment of this
11 subsection shall require that the organization agree by
12 contract with the Secretary to pay at least full cost for
13 the delivery of water used in the production of any
14 crop of an agricultural commodity for which an acreage
15 reduction program is in effect under the provisions of
16 the Agricultural Act of 1949, if the stocks of such
17 commodity in Commodity Credit Corporation storage
18 exceed an amount that the Secretary of Agriculture
19 determines is necessary to provide for a reserve of such
20 commodity that can reasonably be expected to meet a
21 shortage of such commodity caused by drought, natural
22 disaster, or other disruption in the supply of such com-
23 modity, as determined by the Secretary of Agriculture.

1 “(2) The Secretary shall announce the amount of the
2 full cost payment for the succeeding year on or before July 1
3 of each year.

4 “(3) As used in this subsection, the term ‘full cost’ shall
5 have the meaning given such term in paragraph (3) of section
6 202 of the Reclamation Reform Act of 1982.

7 “(4) This subsection shall not apply to—

8 “(A) any contract which provides for irrigation on
9 individual Indian or tribal lands on which repayment is
10 deferred pursuant to the Act of July 1, 1932 (chap.
11 369; 47 Stat. 564; 25 U.S.C. 386(a); commonly re-
12 ferred to as the “Levitt Act”);

13 “(B) an amendment of any contract with any or-
14 ganization which, on the date of enactment of this sub-
15 section, is required pursuant to a contract with the
16 Secretary as a condition precedent to the delivery of
17 water to make cash contributions of at least 20 percent
18 of the cost of construction of irrigation facilities concur-
19 rently with the construction of such facilities by the
20 Secretary;

21 “(C) any contract which carries out the provisions
22 of the Garrison Diversion Unit Reformulation Act of
23 1986 (Pubic Law 99-294, 100 Stat. 418); and

1 “(D) water delivered to any agricultural producer
2 who is not a participant in any acreage reduction pro-
3 gram in effect under the Agricultural Act of 1949.”.

4 **TITLE XXII—BUY-AMERICAN**

5 **SEC. 2201. BUY-AMERICAN REQUIREMENT.**

6 (a) **DETERMINATION BY THE SECRETARY OF THE IN-**
7 **TERIOR.**—If in carrying out title I of Public Law 97-293 (96
8 Stat. 1261), any provision of this Act, or any amendment
9 made by this Act, the Secretary of the Interior, with the
10 concurrence of the United States Trade Representative and
11 the Secretary of Commerce, determines that the public inter-
12 est so requires, the Secretary of the Interior is authorized to
13 award to a domestic firm a contract that, under the use of
14 competitive procedures, would be awarded to a foreign firm,
15 if—

16 (1) the final product of the domestic firm will be
17 completely assembled in the United States;

18 (2) when completely assembled, not less than 51
19 per centum of the final product of the domestic firm
20 will be domestically produced; and

21 (3) the difference between the bids submitted by
22 the foreign and domestic firms is not more than 6 per
23 centum.

1 In determining under this subsection whether the public in-
2 terest so requires, the Secretary shall take into account
3 United States international obligations and trade relations.

4 (b) LIMITED APPLICATION.—This section shall not
5 apply to the extent to which—

6 (1) such applicability would not be in the public
7 interest;

8 (2) compelling national security considerations re-
9 quire otherwise; or

10 (3) the United States Trade Representative deter-
11 mines that such an award would be in violation of the
12 General Agreement on Tariffs and Trade or an inter-
13 national agreement to which the United States is a
14 party.

15 (c) LIMITATION.—This section shall apply only to con-
16 tracts for which—

17 (1) amounts are authorized by title I of Public
18 Law 97-293, titles V through XXIV of this Act, or
19 any amendment made by titles V through XXIV of
20 this Act to be made available; and

21 (2) solicitations for bids are issued after the date
22 of the enactment of this title.

23 (d) REPORT TO CONGRESS.—The Secretary shall
24 report to the Congress on contracts covered under this sec-
25 tion and shall report to the Congress on the number of con-

1 tracts that meet the requirements of subsection (a) but which
2 are determined by the United States Trade Representative to
3 be in violation of the General Agreement on Tariffs and
4 Trade or an international agreement to which the United
5 States is a party. The Secretary shall also report to the Con-
6 gress on the number of contracts covered under this title and
7 awarded based upon the parameters of this section.

8 (e) DEFINITIONS.—For purposes of this section:

9 (1) SECRETARY.—The term “Secretary” means
10 the Secretary of the Interior.

11 (2) DOMESTIC FIRM.—The term “domestic firm”
12 means a business entity that is incorporated in the
13 United States and that conducts business operations in
14 the United States.

15 (3) FOREIGN FIRM.—The term “foreign firm”
16 means a business entity not described in paragraph (2).

17 SEC. 2202. PROHIBITION AGAINST FRAUDULENT USE OF
18 “MADE IN AMERICA” LABELS.

19 (a) If the Secretary of Interior determines that any
20 person intentionally affixes a label bearing a “Made in Amer-
21 ica” inscription to any product sold in or shipped to the
22 United States that is not made in America, the Secretary
23 shall declare that person ineligible to receive a Federal con-
24 tract or grant in conjunction with the issuance of any con-
25 tract made under this Act for a period of not less than three

1 years and not more than five years. The Secretary may bring
2 action against such person to enforce this subsection in any
3 United States district court.

4 (b) - RESTRICTIONS ON CONTRACT AWARDS.—No
5 person or enterprise domiciled or operating under the laws of
6 a foreign government may enter into a contract or subcon-
7 tract made pursuant to this Act if that government unfairly
8 maintains, in government procurement, a significant and per-
9 sistent pattern or practice of discrimination against United
10 States products or services which results in identifiable harm
11 to United States businesses, as identified by the President
12 pursuant to section 305(g)(1)(A) of the Trade Agreements
13 Act of 1979.

14 TITLE XXIII—SUNNYSIDE VALLEY IRRIGATION
15 DISTRICT

16 SEC. 2301. CONVEYANCE.

17 The Secretary of the Interior shall convey to Sunnyside
18 Valley Irrigation District of Sunnyside, Washington, by quit-
19 claim deed or other appropriate instrument and without con-
20 sideration, all right, title, and interest of the United States,
21 excluding oil, gas, and other mineral deposits, in and to a
22 parcel of public land described as lots 1 and 2 of block 34 of
23 the town of Sunnyside in section 25, township 10 north,
24 range 22 east, Willamette Meridian, Washington.

1 **TITLE XXIV—SLY PARK UNIT SALE**2 **SEC. 2401. SALE OF SLY PARK UNIT.**

3 (a) **IN GENERAL.**—The Secretary shall, as soon as
4 practicable after date of enactment of this Act, sell the Sly
5 Park Unit to the El Dorado Irrigation District.

6 (b) **SALE PRICE.**—The Secretary shall negotiate with
7 the District a sale price which is acceptable to both the Dis-
8 trict and the United States. The factors to consider when
9 negotiating the sale price shall primarily include, but are not
10 limited to—

11 (1) the construction costs as included in the ac-
12 counts of the Secretary, plus

13 (2) interest on the construction costs allocated to
14 domestic use at the authorized rate included in enact-
15 ment of the Act of October 14, 1949 (63 Stat. 852),
16 up to an agreed upon date, plus

17 (3) the presently assigned Federal operation and
18 maintenance costs, less

19 (4) all revenue to date as collected under the
20 terms of the contract (Symbol 175-1809) between the
21 United States and the El Dorado Irrigation District.

22 (c) **TERMS OF PAYMENT.**—The Secretary may negoti-
23 ate for a payment of the purchase price on a lump-sum basis
24 or on a semiannual basis for a term of not to exceed twenty
25 years. If payment is not to be lump-sum, then the interest

1 rate to be paid by the District shall be the rate referred to in
2 subsection (b)(2).

3 (d) CONVEYANCE.—Upon completion of payment by the
4 District, the Secretary shall convey to the El Dorado Irriga-
5 tion District all right, title, and interest and future liability of
6 the United States in and to the Sly Park Unit. All costs
7 associated with the transfer shall be borne by the District.

8 SEC. 2402. DEFINITIONS.

9 For the purpose of this title, the term—

10 (1) “El Dorado Irrigation District” or “District”
11 means a political subdivision of the State of California
12 duly organized, existing, and acting pursuant to the
13 laws thereof with its principal place of business in the
14 city of Placerville, El Dorado County, California.

15 (2) “Secretary” means Secretary of the Interior.

16 (3) “Sly Park Unit” means the Sly Park Dam
17 and Reservoir, Camp Creek Diversification Dam and
18 Tunnel and conduits and canals as authorized under
19 the American River Act of October 14, 1949 (63 Stat.
20 853).

Senator BRADLEY. We have a long list of witnesses. Of course, we begin with the two most important witnesses to the Senate, the Senators from Utah, Senator Garn and Senator Hatch.

Senator Garn, you will be on the other side in short time, but I appreciate your wanting to speak to the subcommittee from the table. The floor is yours. You have obviously cared about this issue for a long time, know a lot about it, and the subcommittee will welcome your testimony.

STATEMENT OF HON. JAKE GARN, U.S. SENATOR FROM UTAH

Senator GARN. Thank you very much, Mr. Chairman. We appreciate your holding this hearing this morning.

First may I give you just a brief background on my involvement in this particular project. It was 23 years ago this November that I was elected to the Salt Lake City Commission, and at that time my desire was that I be given the portfolio of running the airport and public parks. But I was assigned by the wisdom of the mayor and other city commissioners to be head of the water department. And at that time, all I really knew is if you turned on a tap, water came out of it. But I soon learned under the tutelage of Mr. Charlie Wilson, who had been superintendent of the Salt Lake City Water Department for a number of years and is still one of the most pre-eminent water experts in Utah at the age of 81.

And the very first thing—I had been a city commissioner for 2 days—he called me into his office and explained to me the importance of the Central Utah Project. I literally for 23 years have been involved and did not at that time expect that it would be a career job to spend my entire public career trying to complete the Central Utah Project.

What is difficult for many of our colleagues in the House and the Senate to understand is that Utah is the second most arid State in the country, second only to Nevada in terms of lack of moisture. And the fact that this summer is, unfortunately, typical of most of our summers, we have had less than a half an inch of rain in most of the State since the first of June. And, therefore, our only source of water is the winter snow melt and the ability to store it.

Now, I have been around long enough on this committee and others to understand the controversy over water projects, but I do not know that there is another one in the country where a State is so totally dependent upon the completion of that project. I have said before, and it is partially flippant, but not entirely, if Brigham Young had stopped 130 miles east of Salt Lake City and said this is the place, the population would be where the source of the water is. But he did not. He went too far west, and so, to sum it up, our problem is how do we get that water from the east side of those mountains to the west side where the vast majority of the population of our State is. And that is, very simply put, what central Utah is all about, to match the population with their water resources.

We have heard a great deal about conservation. Right now conservation does not mean anything in Utah. You can put bricks in your toilet bowl. You can do all the good things, and all we do then is save it for the Great Salt Lake because that is where it is going

to end up. If you do not have the ability to store it on the up side of those streams in the mountains, and you save it as it runs through the cities and towns, it is going to end up in the Great Salt Lake and evaporated. If we can complete Central Utah, then conservation makes sense because you have the ability to store that water before its use and literally save it for more beneficial uses.

This summer we have had innumerable cities and towns on water rationing in the State of Utah, and yet in the very driest of years, back in the 1930's in the worst droughts that the State has had, we have sufficient snow melt to carry even today's and future population if we have the ability to store it through the summer months. And I recognize that you probably understand this, but it is a concept that I have to continue to try to get over to my colleagues of winter snowfall, summer drought, and the need to be able to store that.

So, it has been a long time. The project was originally supposed to be completed in 1972, along with the interstate highway system. And it has become much more expensive and much more controversial, primarily as a result of delay. But when I say controversial, I think the record must show that in all of more than three decades that this project has been under way, that there has been no dissent from any elected public official in Utah without regard to party, every member of the legislature that I am aware of, every governor, every member of this congressional delegation currently, as well as during all those decades, Republicans and Democrats alike, when Democrats were virtually in control of the delegation and now when Republicans are. And that is highly unusual. I would doubt that you could find a project of this size any place in the country where there was simply no elected political opposition, and that continues today with the united Utah delegation, united legislature, a governor who supports what we are attempting to do.

Now, with that background, Mr. Chairman, let me bring you up to date briefly because I know there are a lot of witnesses.

Since the Utah congressional delegation first introduced the CUP completion bill almost 3 years ago, we have endeavored to craft legislation which is sensitive to the new realities of the arid West and also in the Congress. We have learned that in order to build water projects, they must be cost efficient, environmentally sound, and in this case address the legitimate needs of Native Americans who are participants in the project.

Our delegation has negotiated with our Colorado River Basin State neighbors, environmental groups in Utah and here in Washington, Indian tribal representatives, public power entities, farmers, and urban water users. We have not found reaching an agreement amongst these disparate groups to be easy. We have spent enormous amounts of time over these last 3 years. In fact, negotiations have been protracted, frustrating, disappointing at some times. Yet, now after some 3 years, we do have a bill which we think meets all of these tests which were demanded of westerners who want Federal water projects.

First, by having the Central Utah Water Conservancy District construct the remaining water delivery features, the cost of construction can be reduced substantially. This is borne out by previous experiences where with the district in charge of contracting au-

thority construction costs were reduced by over 35 percent from projections made by the Bureau of Reclamation. The bill authorizes completion of both the municipal and irrigation features of the CUP.

Secondly, the bill establishes what the National Wildlife Federation refers to as one of the, if not the most, aggressive water conservation plans in the country. Local water districts have embraced the proposed plan and look forward to stretching out the scarce water supplies the project will provide.

The legislation provides local cost sharing for the remaining construction features at a rate of 35 percent. This is a substantial sum for the people of Utah to pay. Mr. President, I believe this burden is one Utahans will bear in order to ensure an adequate, long-term water supply for our State.

Finally, the bill will provide for the completion of the long neglected environmental mitigation features associated with the CUP and, as I mentioned earlier, will honor the Government's commitments to the Ute Indian Tribe.

All in all, this legislation represents the substantial change in approach to water resource development projects. I believe it reflects the realities of the 1990's while honoring the commitments made by the Government to the people of Utah in the 1950's. This Government will be made to keep its word. Senator Hatch and I, along with all three of our House colleagues, are pleased to recommend this bill to the Congress and feel that it is necessary that it be enacted before the 101st Congress comes to an end.

I have had the opportunity, Mr. Chairman, to review briefly the administration's proposal, and I must say I am very disappointed in it. I feel that they have not acted in good faith in negotiating with me, which has gone on over a period of months, and have frankly not kept their commitments. And where that fault lies I think is primarily in OMB, but that still does not alter my statement that I do not think they have negotiated in good faith and did not have the courtesy even to inform me of their opposition to the bill as it is now constituted.

It is a typical fuzzy statement. While they support the completion in principle and so on, they have this list of objections. Well, they have a right to their objections. I do not think they have a right to stall for 3 or 4 months, drag it on and on and on, and not really be participants in the negotiations, and then last night make a decision to oppose unless all their conditions are met. I would suggest they become part of the team rather than part of the opposition.

GAO's testimony is predictable. I would suggest that we have the opportunity to discuss that at much greater length in the committee as we progress with this. They are asking for a standard on the I&D system that has never been applied to any other water project before, but they address that on a standalone basis. There simply, to my knowledge, has not been a water project that has not been looked at in its totality for cost effectiveness. And for the first time, to single out one feature of a project and say that is not cost effective without looking at the overall completion, I think that is one thing that we have to make certain that we do not apply just to one project. GAO's testimony does that. Part of what the adminis-

tration is asking for in their statement of principles for the first time also is doing the same thing. We want to be treated the way everybody else is being treated and not be singled out for special detrimental treatment.

I have taken too long with all the other witnesses, Mr. Chairman, but obviously as a member of the committee, I intend to be available to discuss these issues in much more detail.

Thank you very much.

Senator BRADLEY. Senator Garn, let thank you. No, I think it was very valuable that you begin by making the presentation that you did. I think it was very helpful. And, of course, when you are finished, please join us up here.

Senator Hatch.

STATEMENT OF HON. ORRIN G. HATCH, U.S. SENATOR FROM UTAH

Senator HATCH. Thank you, Chairman Bradley and members of the committee. I would like to express my appreciation to the subcommittee for holding this hearing today.

As you are well aware, the Utah congressional delegation, in cooperation with a coalition of environmentalists, farmers, Indians, power interests, sportsmen, State leaders, and local elected officials, have spent much of the last 2 years in vigorous detailed and sometimes very contentious negotiations trying to reach an agreement on legislation that would lead to the completion of the Central Utah Project and meet outstanding obligations to our folks out in Utah. While it was difficult, an agreement was finally reached by our very diverse coalition, and it is being considered here today in the form of S. 2969.

Now, I doubt that anyone who was involved in these negotiations is completely satisfied with the final product. Compromises were required of literally everyone, but as a result of those compromises, we now have a bill that has virtually the support of every affected group. From our compromise, we have created a balanced and innovative bill that will finally address the many difficult issues associated with the construction of the Central Utah Project. S. 2969 is a landmark piece of western water legislation, and I would like briefly to discuss some of the highlights.

Our legislation will provide sufficient funds to complete both Wasatch Front municipal and southern irrigation components of the project. We have included provisions to reform almost every adverse environmental impact that has resulted from construction of the Central Utah Project. It guarantees minimum stream flow protection to 240 miles of Utah's streams and rivers. We have provided a major funding source to restore or improve wetlands, big game range lands, and fisheries. We have required water users to develop conservation plans in an effort to better protect and manage Utah's water resources. In addition, we have eliminated several features that were considered too costly or unnecessary.

A key to the agreement is the consensus concerning the establishment of an ongoing mitigation and conservation fund in Utah to assist in the repair and enhancement projects called for in the bill. Under the plan we have developed, project beneficiaries and

State and Federal Governments would all contribute to establish the fund.

We have also included a title to resolve the longstanding claims of the Ute Indian Tribe against the U.S. Government, and I personally believe that that component is an essential part of the bill and that it is time for the Government to finally make good on its promises.

Mr. Chairman, I am certain you are well aware that the Central Utah Project is extremely important to the future of the State of Utah, and its completion has been of paramount importance to me, to all members of our delegation for all the years that I have spent representing Utah and for each of our members of the delegation. And I agree with Senator Garn that he has been working on this project long before he came to the Senate and every year he has been in the Senate.

For Utahans, the wise management of water is a necessity. It is a natural resource without which there can be no growth of any kind in our State. It was the recognition of the fact that Utah was one of the driest States in the country which led to the development of the Central Utah Project, a project designed to allow the State of Utah to utilize water from our many mountain streams in a manner that would enable the State to control its destiny and growth. What began as a vision is now nearing completion and total fulfillment, but action must be taken by both the House and the Senate in order for this to occur.

There is no question that we are asking for a substantial increase in our spending ceiling, but I believe our request is more than justified. We are asking that the Federal Government fulfill a promise that was made to the people of Utah over 40 years ago. We are attempting to provide the people of Utah with a reliable source of water that will guarantee economic growth and stability well into the next century while addressing the severe environmental impacts associated with the construction of the project. If approved, our legislation will, among other things, reclaim water for municipal, industrial and agricultural uses, help prevent flooding and accompanying property damage, provide facilities for recreation and fish and wildlife, and increase farm and industrial income.

Finally, Mr. Chairman and members of the committee, I hope that you will find that the creative efforts that this delegation and all concerned have put into this project to be worthy of your support. I believe we have developed a very balanced proposal that takes into consideration the needs of all of our people in Utah, as well as our responsibilities to the American taxpayer. So, I want to thank you for your willingness to hold these hearings and for your past assistance in helping to move this project forward.

Finally, I have to express my disappointment with primarily OMB and with the administration for the testimony they will give here today. I agree with Senator Garn. We have all worked very, very hard on this, and we have been led to believe that we would have more cooperation and support from the administration. And I believe we will in the end. We are just going to see what happens here, but I have to say that neither of us are very happy about the testimony that will be given today. In fact, to put it bluntly, we are really, really irritated. So, I would like to put it in other terms, but

I got in trouble out in Utah once doing that. So, I will just put it on that basis and hope that the people in the White House and others will be listening because Senator Garn and I intend to continue to work on this project and to see that it is completed, and we believe that it will be. And we would appreciate all the help that you can give us in the process.

Thank you very much.

Senator CONRAD. Thank you for excellent testimony from both of you. It is certainly of great assistance to the subcommittee. It reminds me a little of the great quote from Yogi Berra. "I have deja vu all over again."

[Laughter.]

Senator CONRAD. As you perhaps both know, we have a major water project in my State, and the comments that you have made with respect to the administration in respect to the absence of good faith are comments that would apply directly to my State. We have actually gone through a situation in which the Federal Government sponsored a reformulation act in 1985, went through the whole process sponsored by the Federal Government, and now they have turned their back on even that agreement. So, those of us who reside in the West are used to administrations of whichever party, unfortunately, turning their backs on fundamental agreements and pledges that were made to these Western States.

Now that the Chair has returned, I might turn it back to him.

Senator BRADLEY. Thank you very much, Senator Conrad.

Let me apologize, Senator Hatch. I was called out by a phone call from another Senator.

Senator GARN. It was great testimony, Bill.

[Laughter.]

Senator BRADLEY. I understand we have it on video tape, and I will watch it tonight very late. I absorb this during my sleep.

[Laughter.]

Senator HATCH. You have heard it before, Bill. That is all I can say.

[Laughter.]

Senator BRADLEY. Let me thank both of you for your testimony and your willingness to come before the subcommittee. I know it is very important to both of you.

Senator HATCH. It is. Thanks very much.

Senator BRADLEY. Our next witnesses are from the House of Representatives, Congressman Wayne Owens, Congressman Jim Hansen, Congressman Howard Nielson. Gentlemen, welcome to the subcommittee. It is great to see you here, and the floor is yours, Congressman Owens.

Mr. OWENS. Thank you very much, Senator.

Senator BRADLEY. I know that you have labored long and hard over this issue for many years, and I know that you have been instrumental in making things happen in the House.

STATEMENT OF HON. WAYNE OWENS, U.S. REPRESENTATIVE FROM UTAH

Mr. OWENS. Thank you very much. It has been my pleasure over the years as well to visit periodically with you and your interests

from the beginning. And the successful completion of this project has been made manifest, and your integrity in the issues, of course, must yet play themselves out. I know you have some concerns, and I am delighted to have the chance to address them this morning.

We come very late in this session to the Senate with this hearing. As you know, because you followed it very carefully, as has your very able counsel, Mr. Jensen, we have for 3 years been working on this project—the entire congressional delegation in the House and in the Interior Committee on which both Congressman Hansen and I work. And all five members of the delegation have been heavily involved in this from the beginning.

We have, 3 years ago since it became obvious that we had to have an extension of this bill to complete this project, been consulting literally dozens and dozens of organizations and experts to try to provide for a bill which addressed not only the trans-basin transportation of water, but addressed the environmental and the fish and wildlife implications, as well as the economic realities of completing this legislation. And hundreds of people have been involved in this process and dozens and dozens of organizations.

What we have before you today, Mr. Chairman and members of the committee, is a bill which is the product of the best minds of everyone involved and is a compromise crafted very carefully, lovingly under the spiritual guidance of the high priest of the Central Utah Project, Senator Garn. We have put together a bill which is I think an excellent balance of those three major concerns which you expressed in your opening testimony and which I think will bear up under even this last-minute, perfidious approach of changing previous testimony which the administration offered this morning of which Senator Garn spoke so powerfully on this morning. We think it has to be kept intact. You will hear testimony of different groups here today who will say it is not everything we wanted, but it is a compromise acceptable basically to every single interest involved. That does not come easily. It is an economically sound transfer, Mr. Chairman.

There is genius in the design of this project which takes this little water of water which nature deposits in the high Uintas. It is an east-west range of mountains, I think almost the only one in the country. So, the water deposited facing south in the spring is lost in a month's time if we do not gather it. It would have been cheaper probably to do as Senator Garn suggested, moving people perhaps out to the Uinta Basin, but 35 years ago, the decision was made to do the opposite. And it is the largest trans-basin diversion of water ever accomplished in this country. It should have been done 15 years ago, but in the manner of appropriations, the Central Utah Project, the last of all the major water projects in the country, was kept last in funding as well.

But we have crafted a bill, Mr. Chairman, which I think satisfies in some compromised way every interest involved, and we present it to you with an immense amount of pride of product believing that it is not only economic, it is environmentally sound. It does more for fish and wildlife and preservation of wildness than any legislation ever passed in implications for Utah. And I think it satisfies fully the prerequisites that you set down this morning.

And we will be, of course, arguing and talking and twisting, as best you will permit, your arm in this to get this thing through because there are very few weeks left. But we do not come late to this. As I pointed out, the entire congressional delegation has worked for 3 years over on the House side to try to bring this product, this 84-page product, which we present to you this morning.

And though the irrigation project, which you, Mr. Chairman, mentioned has some economically questionable factors to it, which we admit openly, still the promises of 35 years are fulfilled here. And if Utah is the second most arid State in the Nation, as it is, then southern Utah served by this irrigation project is the most arid of the second most arid State. And it would be a breach of confidence of the worst kind if we were not to fulfill that obligation to complete that irrigation project for southern Utah.

And I speak very strongly, Mr. Chairman, because these things are felt deeply, and we have put so much of our effort, all of us unitedly in this delegation and the dozens of people behind me this morning, into providing you with this project. We hope, Mr. Chairman, that you will take that kind of background into consideration as you listen to these witnesses and as you provide for the Senate work product.

Thank you very much for the opportunity to speak to you this morning and for the opportunities of the past.

Senator BRADLEY. Thank you very much, Congressman Owens for your testimony and insight into the project.

Congressman Hansen.

STATEMENT OF HON. JAMES V. HANSEN, U.S. REPRESENTATIVE FROM UTAH

Mr. HANSEN. Thank you, Mr. Chairman. I appreciate your holding this hearing today, and like the others have stated, I have worked on this a while. I have been 10 years on the Interior Committee and have noticed all of the things that have gone through in reclamation projects.

I do not want to be redundant and just repeat all these things. You have heard them a thousand times. But let me just say I do not know if we can ever impress upon you folks from the east the importance of why we need water out there. The Lord blesses you people every day, and you do not have irrigation systems and all that type of thing. We end up in an area that when they got out that way, they said we have to make this desert blossom like a rose. And the only way they could ever do it was to impound water. And that has the way it has been working in the Western States. So, our particular needs are entirely different than others.

I know sitting on the House Armed Services Committee everyone is calling me about home porting. Well, home porting would not mean much to the State of Utah. We do not give a hoot and a holler about home porting, but it is a particular need to some States who happen to have sea coasts. So, that means a lot to them.

I personally feel that as we look at this thing—and I definitely support the statements of my colleagues before me—where is the fairness issue in this? I have sat there for 10 years looking at these reclamation projects. I look at the Central Arizona Project and the

other particular projects that come along, and I as I look at this thing from the administration—and I have not had a chance to read it, and you people will go into detail on it today—I do not see where these questions were asked in those other areas. I guess we go down to the idea if we want to get into big problems around this area in both Houses, we find we treat people differently. And in this particular area where it means so much to the State of Utah, it means so much to the arid West that we do something with it, I would surely hope that the administration would realize if we are going to treat Utah this way, well, let us treat the other 49 States the same way. And I honestly feel it is a little unfair to come up with these questions that I briefly have gone over.

I would hope that this committee would do this in an expeditious manner and move this bill forward, that we could get it through both houses and get it resolved. I know this is a time of great austerity, but I further realize the importance that we have out in that area. If Utah is going to grow at all, if anything is going to happen to the West, we do it on water. And if we do not have water, we might as well dry up and all of us move back with you folks. And it seems to me you have plenty of people here now. We would appreciate staying in the West. So, give us that one element that we need more than any other element. It seems so basic and redundant and nothing to you folks because it just falls out of the sky. To us it is probably the major thing we play with. We would appreciate your consideration of this bill.

Senator BRADLEY. Thank you very much, Mr. Hansen.
Congressman Nielson.

**STATEMENT OF HON. HOWARD C. NIELSON, U.S.
REPRESENTATIVE FROM UTAH**

Mr. NIELSON. Thank you, Mr. Chairman.

Mr. Chairman, committee members, I appreciate the opportunity to appear before you today to testify on behalf of the legislation to increase the amounts authorized to be appropriated for the Central Utah Project of the Colorado River Storage Project.

This bill represents a real compromise reached by members of the Utah delegation with input from urban and rural water users, public power interests, environmental groups, the Ute Indian Tribe, the administration, the State of Utah and many other interested parties. We have spent many months working toward resolution of some serious conflicts in order to develop legislation which will keep the Federal Government's commitments for water development in the State of Utah. My colleagues have all mentioned the need for water in the second driest State in the country.

I am pleased that many of the provisions we have in this legislation are improvements over the bill 2 years ago. We have done our best to keep the legislation neutral so far as the other States' participation, which was one of the problems we had last time. We have provided for a water conservation plan, which was lacking last time. We have provided for real cost sharing between Federal, State, and local interests, which was not there last time. And we provided for more fiscally responsible construction of the projects

listed in the bill, and we have saved 35 percent on the original costs of some of those projects.

The main title of the bill—as mentioned earlier I have it in my testimony, but let me add we have the Indian problem well in hand in this one, which was left out last time, and also we have straightened out a number of objections that I personally had last time in regard to the financing through public power.

The main titles of the bill provide for the following: completion of the I&D components of the Central Utah Project, both in the Sevier River Basin, as Mr. Owens mentioned, and also the Uinta Basin; funding for environmental mitigation and enhancement through the project area; and resolution of longstanding commitments to the Ute Indian Tribe.

I would like to voice my strong support for the completion of the irrigation and drainage components of the Central Utah Project. Three of the five of us were raised in the south central part of the State, which is concerned here, the Sevier River Valley. In fact, Senator Garn and I are from the same hometown. I do not know whether he is proud of that; I am proud of that. He was born some years after I was in that town.

I would like to voice my strong support for the I&D components. Utah is, as I mentioned before, the second most arid State.

For over 30 years, many of my constituents have been paying taxes in good faith toward the completion of this project with promises made in 1956. The main purpose was initially to provide for irrigation and drainage to divert water which otherwise would flow down the Colorado River into areas where it could be used. These people have contributed input to this legislation and feel that they deserve to have their promises fulfilled. And I want to compliment members of the delegation, Congressman Owens, Senator Garn particularly, for insisting on that feature of the bill. I think that is important.

The M&I is important also, and while I do not sit on the Interior Committee—I am on the Energy and Commerce Committee which has other interests in my district—most of the construction, in fact, 95 percent of it, is in my district, and most of the features added to this bill are in my district. So, I have a real interest and have tried to be a team player even though not on that committee.

A lot of the time and effort has gone to reevaluating and adjusting the authorized projects to make them more economical, as I mentioned, a 35-percent savings in the Uinta Basin projects. In view of these efforts, it behooves the Congress I believe to make good on the commitments made in 1956.

The purpose of reevaluating the irrigation components was to lessen the environmental impacts of the Central Utah Project. The legislation creates a commission to oversee the spending of mitigation funds. And while I did not like the commission of the bill 2 years ago, the one today is quite satisfactory and I support it. I cannot think of any other legislation of this type that does as much for the environment as this bill does.

Title IV addressed the Ute Indian Tribe, as I mentioned before. I would like to compliment the Ute Indian Tribe business committee, the State of Utah, the CUP and the Conservancy District particu-

larly for their efforts to resolve the concerns dealt with in this title.

I support most of the provisions of the legislation. I must take exception to the Utah Lake wetlands preserve established as an amendment in title II. I have supported the bill as it came to the committee. I did not support the amendment.

I would like to submit for the record letters from seven cities surrounding Utah Lake all in opposition to the Utah Lake wetlands preserve.

I also would like to submit a letter from the Uinta County Commission opposing the bill, and while I do not concur entirely with every detail of these, I want to submit them for the record.

Senator BRADLEY. The letters will be placed in the record.

Mr. NIELSON. Thank you.

Senator BRADLEY. Thank you.

Mr. NIELSON. I would like the rest of my statement to be put in the record.

[The prepared statement of Mr. Nielson and letters submitted follow:]

PREPARED STATEMENT OF HON. HOWARD C. NIELSON, U.S. REPRESENTATIVE FROM
UTAH

Mr. Chairman, Committee Members, I appreciate the opportunity to appear before you today and testify on behalf of this legislation to increase the amounts authorized to be appropriated for the Central Utah project portion of the Colorado River storage project.

This bill represents a compromise reached by members of the Utah delegation with input from urban and rural water users, public power interests, environmental groups, the Ute Indian tribe, the administration, the State of Utah and other interested parties. We have spent many months working toward resolution of some serious conflicts in order to develop legislation that will keep the Federal Government's commitments for water development to the State of Utah.

I am pleased with many of the provisions we have made in this legislation. We have done our best to keep the legislation neutral to the other States participating in CRSP; provided for a water conservation plan; provided for real cost-sharing between federal, State and local interests; and provided for more fiscally responsible construction of the projects listed in the bill.

The main titles of the bill provide for the following: completion of the irrigation and drainage components of the Central Utah project, both in the Sevier River basin and the Uinta basin, funding for environmental mitigation and enhancement throughout the project area, and resolution of longstanding commitments to the Ute Indian tribe.

I would like to voice my strong support for the completion of the irrigation and drainage components of the Central Utah project. Utah is one of the most arid States in this country and is currently suffering through a severe drought that has been going on for the last few years. For over thirty years many of my constituents have been paying taxes in good faith according to the promises of the Colorado River Storage Project Act of 1956. It is my opinion that the main purpose of this bill is to provide for the irrigation and water development projects to the people of Central and Eastern Utah. These people have contributed input to this legislation and have, in keeping with their good faith efforts, agreed to a substantial cost share on the irrigation features. A lot of time and effort has gone into reevaluating and adjusting the authorized projects to make them more economically and environmentally feasible. In view of these efforts it behooves the Congress to make good on the commitments made in the 1956 Act.

During negotiations on this bill considerable effort, and I do mean considerable, was made to ensure that any environmental impacts of the construction of projects would be mitigated. Part of the purpose of reevaluating the irrigation components was to lessen the environmental impacts of the Central Utah project. This legislation creates a commission to oversee the spending of mitigation funds, provides a prioritized schedule for concurrent mitigation and creates an ongoing fund for post

project mitigation and enhancement. I can't think of any other legislation of this type that does so much for the environment.

Title IV of this Act addresses the settlement of water rights claims of the Ute Indian tribe. This is another issue that is long overdue for resolution and I am committed to seeing it put to rest. I would like to compliment the Ute Indian tribe, the State of Utah and the Central Utah water conservancy district for their efforts to resolve the concerns dealt with in this title.

While I support most of the provisions in this legislation, I must take a minute to express my strong opposition to the Utah Lake Wetlands Preserve established in title II. This was added to the bill over my objections as well as the objections of numerous towns and cities, soil conservation districts, farmers, and citizens of Utah county. This idea has been around for a number of years and during that time I have been inundated with letters, phone calls and visits from constituents in Utah county opposing any designation on the lake, particularly Provo Bay.

The bill would designate Goshen Bay and Benjamin Slough as part of the preserve. It was my understanding that this was a compromise position between those who want all three areas designated and those who do not want a refuge at all. While that compromise did not make most of my constituents happy, it was an improvement over the original proposal. Now I hear that the environmental groups demand that Provo Bay be added over the objections of most of the delegation and citizens of Utah county. Such an addition would have an even greater negative impact on Provo City, the local airport, and the county.

Many people in Utah have asked why national environmental groups should have more say in what happens on Utah lake than the people who have lived there for years and years. Mr. Chairman, Senators, how do I answer these people that have spent their lives making a living on the farms and orchards and in the towns bordering Utah lake? Do I tell them that Congress, their nation's government, doesn't care? That their input is unimportant? I sincerely hope that I do not have to go home to the third district and tell them that Congress has turned a deaf ear to their concerns. I would like to submit copies of some of the letters I have received for the record of the committee and hope they receive consideration.

With the exception of the wetlands preserve I am supportive of this bill. This legislation is crucial to future growth and development in the State of Utah. All parties involved in the negotiations of the past months have compromised to arrive at this point. I hope that we can pass this legislation with all of the necessary components to keep the commitments made to all interests, not just a select few. I would be happy to answer any questions.

Thank you.

OFFICE OF THE MAYOR,
Vineyard, UT, September 1, 1990.

Hon. HOWARD NIELSON,
Longworth Building, Washington, DC.

DEAR CONGRESSMAN NIELSON: I appreciated receiving from you a copy of the amendment to H.R. 3960 attempting to designate a bird refuge on Utah Lake. This proposal has met with mixed feelings in our County.

Our County Farm Bureau board discussed the issue and decided to call a meeting of the farmers in the County to determine their feelings. We sincerely appreciated the attendance of Jean Larsen at that meeting from your Provo office.

There was a lot of discussion on the amendment and also on the Central Utah Project as a whole. After presenting printed copies of the amendment and openly discussing it, we voted on the issue. Results are as follows:

- a. Question: Are you opposed to a bird refuge on Utah Lake? 48 votes, yes. (4 did not vote)
 - b. Question: Do you favor the CUP without the addition of a bird refuge on Utah Lake? 22 yes vote.
 - c. Question: Do you oppose the CUP? 13 votes, yes.
 - d. Question: If you have to take a refuge, will you support the CUP? 1 vote yes.
- Clearly, the agricultural community of Utah County does not want the addition of a bird refuge on Utah Lake.

There are many evident changes written into the amendment, and "safeguards" that are mentioned for the benefit of agribusiness in the county. It is our chief concern that there is too much chance for trade-offs that will remove these provisions.

I appreciate the opportunity to respond to your request and your support of our County's number one business.

Sincerely,

J. RULON GAMMON, *Mayor*,

NEBO SOIL CONSERVATION DISTRICT,
Provo, UT, August 30, 1990.

Hon. HOWARD C. NIELSON,
88 West 100 North, Provo, UT.

DEAR CONGRESSMAN NIELSON: Thank you for your letter requesting comment on the Amendment to H.R. 3960 which provides for the creation of a State operated bird refuge on Utah Lake as part of the Central Utah Project. We appreciate the opportunity you have given us to respond.

The Nebo Soil Conservation District has long supported the Central Utah Project and we look forward to a rapid completion of the project. Cooperators in our District are hoping to benefit from the project, but are becoming more and more concerned that the cost of the project will preclude the purchase of project water for agricultural purposes once it finally becomes available. Add-ones to the bill only serve to increase the cost.

We were disappointed to learn that H.R. 3960 included the addition of a bird refuge on and in the surrounding environs of Utah Lake. Even though the bill is substantially less restrictive from that of an earlier proposal, the Nebo SCD continues to oppose the creation of a bird refuge on the lake and surrounding lands.

In our opinion, the bill does not provide adequate assurances to those with agricultural interests near the lake to warrant support of the refuge. Nearby land owners have expressed concern to us that there are no guarantees that agriculture will not be detrimentally impacted in the future. Once the refuge is created they fear the door will open wider for more and more restriction in future years. Many farms and orchards in the area proposed for the refuge are located almost to the lakes edge. Any changes to the lake directly impacts their operations.

Utah Lake and the wildlife which use the lake have co-existed with those of us in agriculture for as long as the valley has been inhabited. We doubt that the addition of a State operated bird refuge will increase the number of birds and other wildlife which are already using the lake and adjacent farm lands.

The District appreciates your consideration of our comments and ask as you meet with your fellow congressional constituents, that our comments be passed on to them. If you need further information regarding our concerns feel free to contact me.

Sincerely yours,

MARION SORENSON, *Chairman*.

SPANISH FORK CITY,
August 23, 1990.

Hon. HOWARD C. NIELSON,
88 West 100 North, Provo, UT.

DEAR MR. NIELSON: In response to your letter dated August 14, 1990 regarding Amendment to H.R. 3960.

Please accept this letter as a response of opposition to the amendment. We feel that there would be potential negative impact on agricultural areas if it were to pass.

Please feel free to contact our offices if you have specific questions regarding our position.

Sincerely,

MARIE W. HUFF, *Mayor*.

TIMPANOGOS SOIL CONSERVATION DISTRICT,
Provo, UT, August 30, 1990.

Hon. HOWARD C. NIELSON,
88 West 100 North, Provo, UT.

DEAR CONGRESSMAN NIELSON: Thank you for your letter requesting comment on the Amendment to H.R. 3960 which provides for the creation of a State operated

bird refuge on Utah Lake as part of the Central Utah Project. We appreciate the opportunity you have given us to respond.

The Timpanogos Soil Conservation District has long supported the Central Utah Project and we look forward to a rapid completion of the project. Cooperators in our District are hoping to benefit from the project, but are becoming more and more concerned that the cost of the project will preclude the purchase of project water for agricultural purposes once it finally becomes available. Add-on's to the bill only serve to increase the cost.

We were disappointed to learn that H.R. 3960 included the addition of a bird refuge on and in the surrounding environs of Utah Lake. Even though the bill is substantially less restrictive from that of an earlier proposal, the Timpanogos SCD continues to oppose the creation of a bird refuge on the lake and surrounding lands.

In our opinion, the bill does not provide adequate assurances to those with agricultural interests near the lake to warrant support of the refuge. Nearby land owners have expressed concern to us that there are no guarantees that agriculture will not be detrimentally impacted in the future. Once the refuge is created they fear the door will open wider for more and more restriction in future years. Many farms and orchards in the area proposed for the refuge are located almost to the lakes edge. Any changes to the lake directly impacts their operations.

Utah Lake and the wildlife which use the lake have co-existed with those of us in agriculture for as long as the valley has been inhabited. We doubt that the addition of a State operated bird refuge will increase the number of birds and other wildlife which are already using the lake and adjacent farm lands.

The District appreciates your consideration of our comments and ask as you meet with your fellow congressional constituents, that our comments be passed on to them. If you need further information regarding our concerns feel free to contact me.

Sincerely yours,

RICHARD CHILDS, *Chairman.*

SPRINGVILLE CITY CORPORATION,
Springville, UT, August 23, 1990.

HON. HOWARD NIELSEN,
1229 Longworth Building, Washington, DC.

DEAR CONGRESSMAN NIELSEN: The impact of a bird refuge upon Springville City on Utah Lake needs to be considered carefully before the adoption of any legislation creating such a refuge. The refuge, as designated, will cover ground located within the boundaries of a number of small cities.

Specifically, it will include a large area of undeveloped property which lies within the Springville City boundaries. It is also contiguous with an industrial park being developed by the City. Some of the restrictions that the bird refuge would carry with it are not conducive to Springville City's Master Plan for the area nor for its industrial development.

Mosquito abatement is essential in the area designated and if not done would make life intolerable during high mosquito season.

The area around Utah Lake, particularly the east and south shoreline, supports numerous communities and supports major agricultural enterprises which would be adversely affected by a major bird refuge.

Birds currently use the Lake and surrounding areas for migratory rest stops, for nesting purposes and for summer habitat. Cannot this usage be continued in a positive way without forcing a formal program that will adversely affect the citizens and communities?

We, therefore, oppose the creation of a large, federally-funded bird refuge on Utah Lake and ask that you make our objections known.

Sincerely,

WILFORD W. CLYDE.
CLADE Y. CREER.
MATT PACKARD.
LOREN J. PHILLIPS.
GORDON F. SMITH,
Councilmen.
DELORA P. BERTELSEN, *Mayor.*

THE CITY OF PROVO, UTAH,
August 23, 1990.

Hon. HOWARD NIELSON,
1229 Longworth Building, Washington, DC.

DEAR CONGRESSMAN NIELSON: Thank you very much for your letter soliciting our input on the proposed bird refuge on Utah Lake which is part of the Central Utah Project bill.

Although we are very grateful the proposed bird refuge is not located on Provo Bay adjacent to the Provo Municipal Airport, we still have some serious concerns about a mandatory bird refuge on any part of Utah Lake. We believe there is ample indication that the Benjamin Slough, Goshen Bay area and Provo Bay are already a natural bird habitat and any Congressional action to make a designated area would be superfluous. Birds do not understand designated boundary lines and therefore the designation could cause more problems with the development and maintenance of our city airport.

We believe that areas in Utah Lake and some surrounding areas will always be a natural bird habitat and there is not a pressing necessity for Congressional action to acquire additional land for bird habitat or to designate parts of Utah Lake as a bird refuge.

Thank you for soliciting our input and for the good job you continue to do representing us in Congress.

Sincerely,

JOSEPH A. JENKINS, Mayor.

UINTAH COUNTY, STATE OF UTAH,
September 17, 1990.

To Whom It May Concern:

The original Uintah Basin support of the Central Utah Project was solicited on the premise of storage projects all the way from Flaming Gorge to the Wasatch front.

Ironically many of the projects promised the Uintah Basin have not been started.

Now we are being asked to substitute the Uintah and Upalco project authorizations for a proposal that requires 35% cost shares and many near impossible hurdles to jump within five years, or we lose all authorizations.

In addition to the deficiencies for continued development in the Uintah Basin, the bill provides a multitude of environmentalist enhancements to be completed regardless of whether or not any of the Uintah Basin or Central Utah I&D projects are completed.

In spite of what this bill does to our area we might still be compelled to support this bill for the interest of the state, if we could be convinced that this bill is really in the States best interest. But inasmuch as it dictates what has heretofore been State and local water right and policy issues, we have no other option but to oppose its passage.

In light of these concerns we are taking the stance and would request your office to take a similar stance of "if this is the best we can do the price is too high."

Sincerely,

NYLE C. BIGELOW.

H. GLEN MCKEE,

Uintah County Commission.

JIMMIE N. REIDHEAD, Chairman.

Senator BRADLEY. Thank you very much for your testimony, Congressman Nielson.

Let me thank all three of you for taking the time to come over here. This is obviously something that is very important to all of you. And, Senator Owens, let me thank you in particular for your continued expression of interest.

Mr. OWENS. Well, I noticed that Senator Garn called you Mr. President, and in that spirit, you are calling me Senator.

Senator BRADLEY. It is exactly the parallelism that I was seeking to draw because I noticed in Senator Garn's statement that comment.

[Laughter.]

Senator BRADLEY. Well, Congressman, I do appreciate your being here.

Mr. OWENS. May I just say, Mr. Chairman, that we have passed out of both the Interior Committee and Merchant Marine and Fisheries this bill which is before you today, and it will pass on the consent calendar next Monday from the entire House.

Thank you very, very much.

Senator BRADLEY. Our first witness is Mr. James Duffus, who is the Director of Natural Resources Management Issues of the General Accounting Office. Mr. Duffus, you will be accompanied by?

Mr. DUFFUS. Mr. Chairman, I will be accompanied today by Mehrzad Nadji, who is Assistant Director for Economic Analysis in GAO, and Dawn Shorey to my left, who is the evaluator in charge of the work that we are going to testify to here today.

Senator BRADLEY. The floor is yours.

STATEMENT OF JAMES DUFFUS III, DIRECTOR, NATURAL RESOURCES MANAGEMENT ISSUES, RESOURCES, COMMUNITY, AND ECONOMIC DEVELOPMENT DIVISION, GENERAL ACCOUNTING OFFICE, ACCOMPANIED BY MEHRZAD NADJI, ASSISTANT DIRECTOR FOR ECONOMIC ANALYSIS; AND DAWN SHOREY, EVALUATOR-IN-CHARGE

Mr. DUFFUS. Thank you, Mr. Chairman.

We are pleased to be here today to participate in this hearing on S. 2969, the Central Utah Project Completion Act. The act would authorize \$150 million in Federal funds for construction of the irrigation and drainage system of the Central Utah Project's Bonneville Unit. According to the estimates by the Department of the Interior's Bureau of Reclamation, the currently authorized Central Utah Project cost ceiling will be insufficient by fiscal year 1992 to construct the irrigation and drainage system.

At your request, Mr. Chairman, we prepared a benefit-cost analysis of the I&D system to determine whether its construction is economically justified. We applied the 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies referred to as the P&Gs that became effective July 8, 1983. These P&Gs were developed by the Water Resources Council to guide formulation and evaluation studies by the major federal water resource development agencies, including the Bureau of Reclamation.

The P&Gs summarize methods for calculating the benefits and costs of water resource development alternatives and are intended to ensure proper and consistent planning by water resource development agencies. They require, for example, that water resource planning be evaluated on the basis of contributions to national economic development consistent with protecting the Nation's environment.

The Bureau did not calculate a separate benefit-cost ratio for the I&D system. To calculate this ratio, we extracted from the Bureau's 1988 benefit-cost analysis of the Bonneville Unit only those benefits and costs associated with the I&D system. This resulted in annual benefits of \$10.2 million and annual costs of \$12.1 million,

or a benefit-cost ratio of 0.84 to 1. This means that for every dollar of project costs, the United States economy would realize a benefit of only 84 cents. Therefore, Mr. Chairman, on the basis of the Bureau's own data and methodology, construction of the I&D system is not economically justified.

We then adjusted this ratio to bring the Bureau's analysis in line with standard economic principles. For example, we evaluated all benefits and costs from a national economic development perspective. We treated taxes as a governmental benefit and included salinity impacts as a project cost. We also adjusted for indirect profits and farmers' labor costs. These adjustments resulted in a \$5 million annual decrease in benefits and a \$5.4 million annual increase in costs. As a result of these adjustments, the annual benefits decreased to \$5.2 million and annual costs rose to \$17.5 million. Accordingly, the benefit-cost ratio was reduced to 0.3 to 1, or, in other words, the United States economy would realize a benefit of only 30 cents for every dollar of project costs.

We reduced annual system benefits by \$2.6 million by excluding indirect profits. The Bureau defines these profits as those earned by food processors, transporters and retailers for delivering increased farm production to final consumers. Profits should be considered a benefit only if they would not have been earned elsewhere in the economy during the 100-year life of the project. Standard economic principles assume that over a long period, such as the 100-year life of the Central Utah Project, labor and capital will find employment elsewhere in the United States economy. We assumed, therefore, that the labor and capital used to prepare and deliver these farm products to the consumer would have been otherwise employed.

We included farmers' labor costs which resulted in a \$2.8 million annual decrease in benefits. Bureau calculations of farm profits omitted farmers' labor costs. Assigning no cost to farmers' labor overestimates farm profits because it assumes that farmers could not be productive elsewhere in the United States economy. In other words, it assumes that outside of farming, they would be unemployed and earn no income for the duration of the project's 100-year life.

We included increased revenues to Federal, State, and local governments resulting from taxing farm output which increased benefits by \$400,000 annually. The Bureau counted taxes only as a cost to farmers, but not as a benefit to the Government. Taxes simply transfer part of the benefits realized by the farmers to the Government.

On the cost side, we increased annual system costs by \$5.4 million to recognize salinity impacts downstream resulting from the I&D system. By diverting water from the Colorado River, the I&D system increases salinity downstream by concentrating salts resulting in lower agricultural yields and higher farm costs. The Bureau excluded these costs because under the Colorado River Compact of 1922, the Bonneville Unit has the legal right to deplete the river. These resulting salinity costs, however, are still a project cost.

In summary, Mr. Chairman, the construction of the I&D system from a strict benefit-cost analysis standpoint is not justified. In the final analysis, the decision whether to authorize funding for the

system is a policy judgment for the Congress, and factors in addition to the benefit-cost analysis, such as regional development contributions from the I&D system and construction costs already incurred for the Bonneville Unit, may be considered.

To assist the Congress in its deliberations, we are beginning, at your request, to analyze the financial impacts of not completing the system, as well as alternatives to its construction.

Mr. Chairman, this concludes my prepared statement, and I would like to submit a detailed statement for the record. We would be glad to respond to questions.

[The prepared statement of Mr. Duffus follows:]

PREPARED STATEMENT OF JAMES DUFFUS III, DIRECTOR, NATURAL RESOURCES MANAGEMENT ISSUES, RESOURCES, COMMUNITY, AND ECONOMIC DEVELOPMENT DIVISION, GENERAL ACCOUNTING OFFICE

Mr. Chairman and Members of the Subcommittee:

We are pleased to be here today to participate in this hearing on S. 2969, "The Central Utah Project Completion Act." This act would authorize \$150 million in Federal funds for construction of the Irrigation and Drainage (I&D) System of the Central Utah Project's (CUP) Bonneville Unit. According to estimates by the Department of the Interior's Bureau of Reclamation, the currently authorized CUP cost ceiling will be insufficient by fiscal year 1992 to construct the I&D system.

At your request, we prepared a benefit-cost analysis of the I&D system to determine whether its construction is economically justified.

SUMMARY OF RESULTS

The Bureau did not calculate a separate benefit-cost ratio for the I&D system. To calculate this ratio, we extracted from the Bureau's 1988 benefit-cost analysis of the Bonneville Unit only those benefits and costs associated with the I&D system. This resulted in annual benefits of \$10.2 million and annual costs of \$12.1 million, or a benefit-cost ratio of .84 to 1. This means that for every \$1 of project costs, the U.S. economy would realize a benefit of only 84 cents.

We then adjusted this ratio to bring the Bureau's analysis in line with standard economic principles. For example, we evaluated all benefits and costs from a national economic development perspective. We treated taxes as a governmental benefit and included salinity impacts as a project cost. We also adjusted for indirect profits and farmers' labor costs. As a result of these adjustments, the annual benefits decreased to \$5.2 million and annual costs rose to \$17.5 million. Accordingly, the benefit-cost ratio was reduced to .3 to 1, or, in other words the U.S. economy would realize a benefit of only 30 cents for every \$1 of project costs.

Thus, from a strict benefit-cost analysis standpoint, construction of the I&D system is not justified. In the final analysis, the decision whether to approve the project is a policy judgment for the Congress, and factors in addition to the benefit-cost analysis, such as regional development contributions and construction costs already incurred, may be considered. To assist the Congress in its deliberations, we are beginning, at your request, to analyze the financial impacts of not completing the system, as well as alternatives to its construction.

BACKGROUND

The Colorado River Storage Project Act of 1956 authorized the Bureau to construct the CUP. The CUP consists of five separate units, the largest of which is the Bonneville Unit. Of the five, construction of two has been deferred, two have been completed, and the Bonneville Unit is presently under construction. (Attachment I provides a graphic presentation of the five CUP units.)

Basically, the Bonneville Unit is divided into six systems that are designed to collect water in the Uintah Basin and transport it through the Wasatch Mountains to the Bonneville Basin through a complex system of aqueducts, tunnels, and canals. Construction of the unit began in 1966, and is expected to be completed in 1996. (Attachment II shows the geographic layout of the Bonneville Unit systems.)

The primary purpose of the Bonneville Unit's I&D system is to supply irrigation water to farmlands in central and southern Utah. The I&D system will also provide a small amount of municipal and industrial water to cities in Juab and Utah Coun-

ties. According to the Bureau, about 40 percent of the I&D system's water will provide supplemental irrigation to presently irrigated land to offset an existing water shortfall, and thereby stabilize existing agricultural production. Most of the remaining I&D system water will be used to irrigate presently unirrigated land to offset land being taken out of agricultural production by urbanization and industrialization.

The cost to construct the I&D system is \$328.5 million, of which \$150 million under S. 2969 will be borne by the Federal Government. The remaining costs will be funded by the Bureau's cost-sharing sponsors. Construction of the I&D system has not begun.

CRITERIA USED IN THE BENEFIT-COST ANALYSIS

At your request, our benefit-cost analysis of the I&D system applied the 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&Gs) that became effective July 8, 1983. These P&Gs were developed by the Water Resources Council to guide formulation and evaluation studies by the major Federal water resource development agencies, including the Bureau of Reclamation.¹

The P&Gs summarize methods for calculating the benefits and costs of water resource development alternatives and are intended to ensure proper and consistent planning by the water resource development agencies. They require, for example, that water resource planning be evaluated on the basis of contributions to national economic development consistent with protecting the nation's environment.

The Bureau incorporated the Water Resources Council's P&Gs into its rules and regulations. Bureau officials informed us, however, that because the 1988 update was, in their view, a refinement of the entire Bonneville Unit plan, it was exempt from the P&Gs. Instead, the Bureau used its 1959 rules and regulations. These rules and regulations provide guidance for economic evaluations of multi-purpose water resource projects, but do not require that the benefit-cost analysis consider national economic development.

We used the P&Gs to adjust the Bureau's benefit-cost analysis. Where they were vague or did not explicitly address the treatment of specific aspects of benefits and costs, we supplemented them with standard economic principles.

RESULTS OF OUR BENEFIT-COST ANALYSIS

Mr. Chairman, I would now like to discuss our analysis and results. We extracted from the Bureau's 1988 benefit-cost analysis of the entire Bonneville Unit those costs expected to be incurred and those benefits expected to be realized only if the I&D system is built. This resulted in a benefit-cost ratio of .84 to 1. Therefore, Mr. Chairman, on the basis of the Bureau's own data and methodology, construction of the I&D system is not economically justified.

We then modified these benefits and costs to bring them in line with the P&Gs and standard economic principles, making those adjustments that were readily quantifiable. We made four adjustments relating to indirect profits, farmers' labor, taxes, and salinity costs. These adjustments resulted in a \$5 million annual decrease in benefits, and a \$5.4 million annual increase in costs. (The Bureau's benefits and costs data and our adjustments are shown in attachment III.)

Excluding indirect profits resulted in a \$2.6 million annual reduction in I&D system benefits. The Bureau defines these profits as those earned by food processors, transporters, and retailers for delivering increased farm production to final consumers. Profits should be considered a benefit only if they would not have been earned elsewhere in the economy during the 100-year life of the project. Standard economic principles assume that over a long period, such as the 100-year life of the CUP, labor and capital will find employment elsewhere in the U.S. economy. We assumed, therefore, that the labor and capital used to prepare and deliver these farm products to the consumer would have been otherwise employed.

Including farmers' labor costs resulted in a \$2.8 million annual decrease in benefits. Bureau calculations of farm profits omitted farmers' labor costs. Assigning no cost to farmers' labor overestimates farm profits because it assumes that farmers could not be productive elsewhere in the U.S. economy. In other words, it assumes

¹ The Water Resources Council, now inactive, consisted of the Secretaries of Agriculture, Army, Commerce, Energy, the Interior, Transportation, and Housing and Urban Development; and the Administrator of the Environmental Protection Agency.

that outside of farming, they would be unemployed and earn no income for the duration of the project's 100-year life.

Including increased revenues to federal, state, and local governments resulting from taxing farm output increased benefits by \$0.4 million annually. The Bureau counted taxes only as a cost to farmers, but not as a benefit to the government. Taxes simply transfer part of the benefits realized by the farmers to the government.

Lastly, recognizing salinity impacts downstream resulting from the I&D system increased costs by \$5.4 million annually. By diverting water from the Colorado River, the I&D system increases salinity downstream by concentrating salts, resulting in lower agricultural yields and higher farm costs. The Bureau excluded these costs because under the Colorado River Compact of 1922, the Bonneville Unit has the legal right to deplete the river. These resulting salinity costs, however, are still a project cost.

The net effect of these adjustments is to reduce the I&D system's benefit-cost ratio to .3 to 1. In other words Mr. Chairman, in order for the construction of this project to be economically justified with a ratio of 1 to 1, project benefits would have to be increased by 232 percent, or existing project costs would have to decrease by 70 percent.

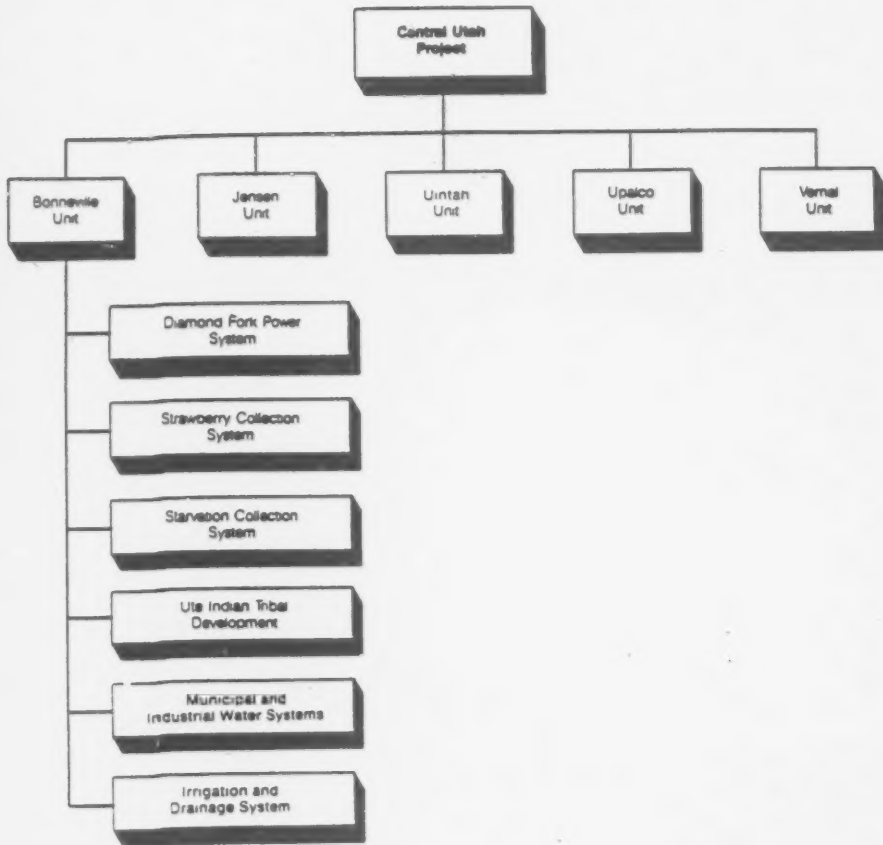
In summary, Mr. Chairman, the construction of the I&D system from a strict benefit-cost analysis standpoint is not justified. However, we recognize that in making its decision whether to approve the project, the Congress may consider other factors.

Mr. Chairman, this concludes my prepared statement. I would be pleased to respond to any questions that you or members of the Subcommittee may have.

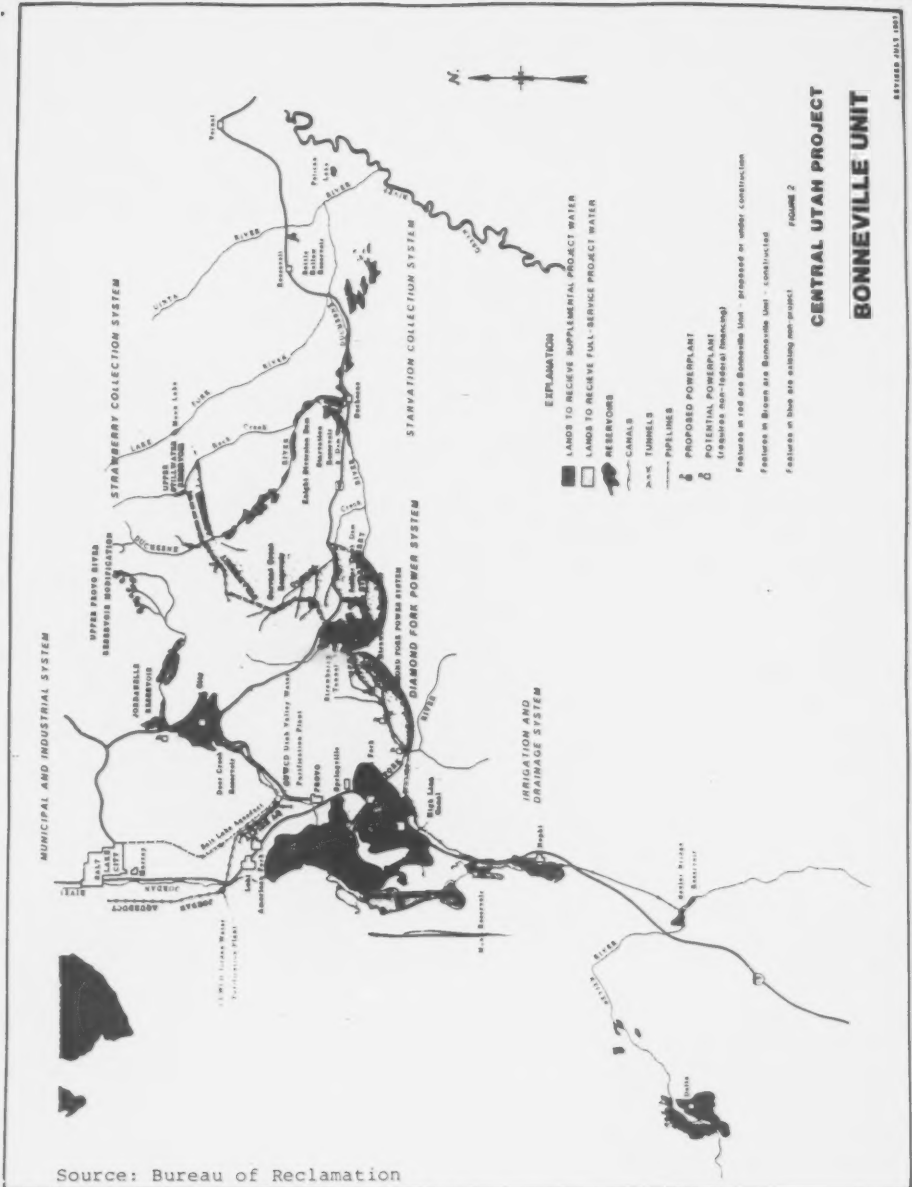
ATTACHMENT I

ATTACHMENT I

Units And Systems
Of The
Central Utah Project



The Jensen and Vernal Units have been completed. The Upalco and Uintah Units have been deferred. The Bonneville Unit is under construction.



(C)

ATTACHMENT III

ATTACHMENT III

ESTIMATED REMAINING BENEFITS AND COSTS
FOR THE CENTRAL UTAH PROJECT BONNEVILLE UNIT'S
IRRIGATION AND DRAINAGE SYSTEM
(Figures in millions)

Annual benefits		\$ 10.2	
GAO adjustments:			
Indirect profits	(2.6)		
Farmers' labor	(2.8)		
Farm tax expenses	<u>.4</u>		
Subtotal	(5.0)	(5.0)	
Adjusted annual benefits		<u>\$ 5.2</u>	
Annual costs ¹		\$ 10.8	
Other costs ²		<u>1.3</u>	
Subtotal		\$ 12.1	
GAO adjustment:			
Salinity costs	5.4	<u>5.4</u>	
Adjusted annual costs		<u>\$ 17.5</u>	
I&D system benefit-cost ratio			
Before adjustment		.84 to 1	[\$10.2/\$12.1]
After GAO adjustment		.30 to 1	[\$ 5.2/\$17.5]

¹Investment cost annualized at 3 1/8 percent for 100 years.

²Other costs include annual operating, maintenance, and replacement costs, as well as assigned Colorado River Storage Project regulatory facilities' costs.

Source: GAC's analysis based on Bureau of Reclamation 1988 data.

Senator BRADLEY. Thank you very much, Mr. Duffus.

Senator GARN.

Senator GARN. Thank you, Mr. Chairman.

First of all, to your knowledge, has this administration or any other or GAO ever analyzed on this basis of cost-benefit analysis on a standalone basis? I am not aware of any time in this country when we have done this kind of analysis. Now, I guess you can prove whatever you want to prove with statistics. I do not dispute your figures on a standalone basis, but on what basis do you and the administration make that kind of an analysis without looking at the overall project unless you want to go back and apply that to every other project that is going on?

Let us pick bits and pieces out of it and do that. We can do that with most any project whether it is water or not. I sit on several appropriation subcommittees. I can pick and choose what I want to prove and make some part of a project look very bad. I question why you are doing this on a standalone basis and if you have ever done that before.

Mr. DUFFUS. We are not aware of any other incremental analysis that has been done for a water resource project. However, we did not examine that, so we are not aware of it. But we did not look to determine if there has been one performed.

We did what we did at the request of the Chairman of this subcommittee. Essentially that was to look at the benefits and costs of the I&D system. That is why we did it.

Senator GARN. But you agree that it is treating it differently than we have treated other projects.

Mr. DUFFUS. As I said, we did not examine whether it was done in other cases, but to the best of our knowledge, we are not aware of any other incremental analysis that has been done.

Senator GARN. Well, see, you have spent a lot of time on something that we have all known all along. I could have answered that question 15 years ago, that if you do it on a standalone, I can pick parts of that project that have a great cost-benefit analysis and parts that do not.

Mr. DUFFUS. When we did our analysis, we used the Bureau's own data and methodology to arrive at the 0.84 to 1 benefit-cost ratio.

Senator GARN. I understand.

Mr. DUFFUS. We extracted from that analysis, which they did in 1988, only those costs and only those benefits that would be realized only if the I&D system were completed.

Senator GARN. I understand. I am not disputing your analysis. I just make a point that somebody is trying to change the rules in the middle of the game and has asked you to participate in that in an unfair analysis that is not done on any other projects on a question that those of us who support the project could have answered without taking your time and wasting the taxpayers' money and putting GAO on particularly that and coming up with what I think is a misleading conclusion without looking at the project as a whole.

It does not look at the fact these rural counties have paid ad valorem taxes that the Government of the United States as a policy decision promised these people that. There is the matter of credibil-

ity of the Government here too, not just in here. I am talking more about the administration's testimony than yours because you are the messenger from your figures. But it is not fair. It is misleading. It ignores the credibility and the promises made by the Government, the Congress and the administration, a long, long time ago before any of us were here. It gives a misleading impression and as well ignores the fact of the sacrifices and the taxes these poor rural counties have made for a long, long time.

I have no further comments, Mr. Chairman.

Senator BRADLEY. Thank you very much, Senator Garn.

Senator Ford.

Senator FORD. Did I understand you right, Mr. Duffus, that you structured this analysis based on the Chairman's request of this subcommittee?

Mr. DUFFUS. We did this work at the request of the Chairman of this subcommittee. Yes, sir.

Senator FORD. But did he set out the criteria for your analysis?

Mr. DUFFUS. No, sir. He did not.

Senator FORD. That is good. I got the impression that the Chairman had set the criteria for your analysis. I wanted to be sure because I got it a little bit different the way it came across to me.

Mr. Chairman, I am here to learn as much as I can about this project. I have read some about it, and I am here basically to help my friends. If I can help them, I am going to do it.

Now, Mr. Duffus, did I understand that you said 84 cents per dollar spent? What was that ratio that you gave there a while ago?

Mr. DUFFUS. What I said was that using the Bureau's own data and methodology, every dollar of project costs incurred for the I&D system would return 84 cents in benefits to the United States economy.

Senator FORD. So, we would lose 16 cents on every dollar spent. Is that correct?

Mr. DUFFUS. That is correct.

Senator FORD. That sounds like damn little compared to forgiving the \$7 billion loan to Egypt.

[Laughter.]

Senator FORD. Did I understand you to state that those farmers that would be sustained on that land could have gone someplace else in the United States and raised a crop? They did not necessarily have to do it there?

Mr. DUFFUS. What I said was that once we computed the ratio of 0.84 to 1 using the Bureau's own benefits and costs data, we then adjusted that ratio applying standard economic principles. One of the adjustments we made, was for farmers' labor costs. When the Bureau did its analysis, they omitted the farmers labor costs in calculating farm profits. And that has the effect of overstating profits. We compensated by reducing benefits to the extent of those costs.

Standard economic principles assume that over a long period—and in this case, 100 years—labor would be employed elsewhere in the economy. The Bureau assumes that the generations of farmers for 100 years would not find employment elsewhere.

Senator FORD. Will not find employment elsewhere or will find employment?

Mr. DUFFUS. The Bureau assumes that they will not find employment elsewhere.

Senator FORD. I sure would like to have some of those farmers come to Kentucky and help us sucker and house the tobacco. That would be a great asset for us. But I do not know what in the hell we would do with them. We just do not have enough land where we are, and we kind of look to them.

I made a trip out to the Midwest in August, and I was impressed with the ability of the farmers to grow and to do well. In South Dakota, for instance, the only difference between that and the flat land—and they were raising sunflowers, and we were raising tobacco. That was gold you would see on each side of the road. And so, I found them compatible to ours.

And I have always found that we ought to try to help our own, support our own economy. And I have sympathy for the Senator from Utah, and I understand that the water projects out west are contentious—here. But as we learn more about the problems and learn more about how to stabilize the economy of this country, it appears to me, instead of driving the farmers off the farm, you ought to do something to try to keep them on the farm.

And so, Mr. Chairman, I look forward to trying to figure out a way to support this project. If I read between the lines right, the administration has not been playing very cricket about this with some of their most staunch supporters. And I think that is something that I enjoy in some respects—

[Laughter.]

Senator FORD [continuing]. And disapprove of in others because we are friends here and not necessarily party partisans.

Senator GARN. Would the Senator yield for a quick comment on this issue?

When you look at the overall cost-benefit analysis—and the reason I made such a point out of singling out one feature—overall with the I&D in it, there is a 1.3. In other words, for every dollar that is spent, there is \$1.30 economic benefit. That why it makes no sense to single out one feature of the project and say that is a loser. It is. That is not the question.

Senator FORD. Well, that is business, Senator. Every grocery store you go into has a lost leader.

[Laughter.]

Senator FORD. And we are in there to buy a loaf of bread at 84 cents instead of 98 cents, and while we are walking up and down those aisles, you can pick up and put everything else in the basket. Then you come out with a profit.

Senator GARN. There is one other point that is very important that we put in this bill and that is that 95 percent of this irrigation water must be subscribed for or it will not be built. So, who is going to make the decision whether they think that water is too high priced or not is the farmers who are going to use it.

Senator FORD. In my part of the country, rural water systems have to be committed to before we can build one. And so, even though we may have water, it is not necessarily the best of water. So, I understand it very well.

I have taken too much time, Mr. Chairman. But I do feel like that they are playing games with this one, and it should not be

done. And I am very hopeful we can work out something to help these people.

Senator BRADLEY. Thank you, Senator Ford.

Senator McClure.

Senator McCLURE. Thank you very much, Mr. Chairman.

Thank you, Mr. Duffus, for your testimony. I want to take just a moment to try to get into context some of the issues that we are trying to deal with here, and I want to understand your testimony.

Can you tell us what proportion of project benefits are actually realized by the people who pay for the project?

Mr. DUFFUS. I do not know if I could give you that specific a response. The data that we extracted from the Bureau's 1988 analysis of the Bonneville Unit however, included the Bureau's consideration of regional benefits.

Senator McCLURE. And did you go back into an analysis of how they calculated regional benefits?

Mr. DUFFUS. No, we did not. We used those numbers so that in our ultimate analysis of 0.30 to 1, those regional benefits were included.

Senator McCLURE. And do you recall what those regional benefits were in terms of a ratio between regional benefits and benefits to the project participants, those who pay for the water?

Mr. DUFFUS. I do not know if we have a ratio, but we can provide for the record those benefits that were regional.

Senator McCLURE. Would you please do that?

Mr. DUFFUS. We would be glad to do that.

[The information referred to follows:]

I&D COMPONENT OF THE BONNEVILLE UNIT

We used the Department of the Interior's Bureau of Reclamation data in computing the benefits and costs to the national economy of completing the Irrigation and Drainage (I&D) system. The benefits are the increased value of national agricultural output resulting from completion of the I&D system. Because the income from the additional agricultural output is earned by farmers on I&D system land, virtually all of the national benefits are also regional benefits. The only exception is social security taxes which represent a tax paid out of the benefits (the incremental income) that flows out of the region. Our estimate, again using Bureau of Reclamation data, is that approximately 98 percent of the national benefits are also regional benefits.

In addition, there are regional benefits that are not national benefits. Such benefits result from the relocation of economic activity within the United States. For example, if as a result of the project, a farm supplier moves from Kentucky to Utah, that is a regional benefit to Utah, but a regional loss to Kentucky. We did not attempt to measure economic activity that would relocate from one part of the United States to another as a result of the project.

The distinction between national and regional benefits made in this statement is based on the Water Resources Council's Principles and Guidelines.

Senator McCLURE. My recollection is that a number of studies have been conducted over the last 50 years in a variety of different fora as to exactly the distribution of benefits. My memory tells me—and I have not checked this for some time—that for every dollar in benefits that is received by the water users, \$3 in benefits go into the pockets of others, that is, as you would guess, in a larger circle to the communities in which they are located, the doctors, the lawyers, the merchants, the implement dealers, the grocers, the others who trade with the farmers who are actually out there on the land, and then into a larger area, the wholesale distri-

bution centers and so on. So, it is about 3 to 1, or to put it another way, for every dollar in benefit, the farmer that is actually on the ground using the water gets 25 cents of that benefit and somebody else gets 75 cents of that benefit.

Does that sound familiar to you?

Mr. DUFFUS. Yes. I am told that, yes, that is correct.

Senator McCLURE. Do you know, Mr. Duffus, of any other expenditure by the Federal Government that meets a cost-benefit analysis and a repayment capacity analysis?

Mr. DUFFUS. Are you talking beyond water resource projects?

Senator McCLURE. Yes, I surely am.

Mr. DUFFUS. Well, I do not know right off.

Senator McCLURE. When we do a mass transit, do we look at whether or not that mass transit is going to pay back dollar for dollar every expenditure that is made?

Mr. DUFFUS. That I do not know.

Senator McCLURE. If we do a toxic waste cleanup, do we look to whether or not the people that are going to use the waste dump pay back dollar for dollar?

Mr. DUFFUS. Again, I do not know.

Senator McCLURE. Well, the answer is I think both obvious and very simple. There is no other activity of Government that goes through a scrutiny that a water project does that it has to meet a cost-benefit analysis that a water project does, that has to have repayment capacity on the part of the direct beneficiaries that a water project does.

I think cost-benefit analyses are very useful to us in ranking and understanding just exactly the economics and the worth. I think repayment capacity is important for us to look at with respect to whether or not a project ought to be built because it helps us make choices between expenditures, between competing water projects as we try to determine where we ought to put our money. But in terms of gross national budgeting, a cost-benefit analysis is a very, very myopic view of one opportunity for the Government to do something with respect to economic development or the social betterment of its citizens. I wish we had the same kind of methodology applied to almost everything we do in this multi-trillion dollar expenditures that we talk about here in Government, but we do not do it except in water projects. And I hope somebody somewhere recognizes that, indeed, we make tremendous assignment of national resources with no attempt to determine how they compare to others in terms of benefit analyses. Now, Members of Congress do that presumably when we make budget allocations.

But I just take this time, Mr. Chairman, because I think it is important for us not to get so myopic about cost-benefit analyses and repayment capacities that we begin to say, well, that is the end all, that is the end of the discussion. If it does not have a 1 to 1 ratio, it cannot be built.

Mr. DUFFUS. I do not think we said that.

Senator McCLURE. I know you did not say that, but there are some who would like to take your testimony and say that is what it means. And I just want to make sure that we do not bootstrap your testimony into meaning something which you have not said that it means. And I appreciate the fact you did not.

Senator Garn said, well, we could have all told you that portions of this project do not meet a repayment capacity or a cost-benefit ratio of 1 to 1. I knew that in 1967 when Congressmen Larry Burton and Sherm Lloyd were before the House Interior Committee trying to get this project moving. I have known it every year from 1967 through 1990. I still know that. We were trying to find a way to do for central Utah what needs to be done in terms of social and regional betterment for the people that live there, including the Native Americans.

And we will have here tomorrow before this committee the desire to double the amount of benefit to Indian tribes in another project with absolutely no repayment capacity, absolutely no cost-benefit ratio, but just the feeling we ought to do something more for them. What are we going to do for the Indians in central Utah? This is one of the things that was devised before I came to Congress. We have never shied away from that in the 24 years that I have been here. I hope we will not now.

Thank you, Mr. Chairman.

Senator BRADLEY. Thank you very much, Senator McClure.

Let me ask you, Mr. Duffus. You testified that you applied standard economic principles to the Bureau's analysis. Will you please explain what these principles are? What are the guidelines?

Mr. DUFFUS. Are you talking about the principles or the guidelines or both, Mr. Chairman?

Senator BRADLEY. Both.

Mr. DUFFUS. The Economic and Environmental Principles and Guidelines were developed by the Water Resources Council, which is now inactive, but consisted of Secretaries of six federal agencies, and the Administrator of EPA. They were developed and became effective in July of 1983 to ensure consistent planning by water resources development agencies. They require that, for example, water resources planning include consideration of national economic development. These were the P&G's that I referred to in my statement today.

Some of the economic principles that we used had to do with the adjustments that we made, which included, for example, that in the long term, farmers would find employment over the 100-year life of this project elsewhere in the economy. That was one example of a standard economic principle. It assumes that——

Senator BRADLEY. 100 years?

Mr. DUFFUS. This project is 100 years. Yes, sir. And the standard economic principle says that over the long term those who have become unemployed as a result of not building a project would find employment elsewhere in the economy.

Senator MCCLURE. Mr. Chairman, could I ask just one question on that because he has made that point three times?

Senator BRADLEY. I would like to finish my questions.

Senator MCCLURE. Oh, surely.

Senator BRADLEY. Then if you would like another round, we will come back to you.

You testified that you are beginning to work on an evaluation of the financial impact of not completing the system and alternatives to its construction. When is that going to be complete? When will that work be finished?

Mr. DUFFUS. We hope to have some preliminary results in the spring of 1991 with reporting anticipated sometime in the fall.

Senator BRADLEY. So, you are basically a year away.

Mr. DUFFUS. About a year away from reporting on that, yes, sir.

Senator BRADLEY. Are there any kind of preliminary views?

Mr. DUFFUS. Not at this point. We have just started that work.

Senator BRADLEY. Well, I want to thank you for your testimony. I think Senator Garn's point is well taken in terms of the overall project, but I do think that your analysis is extremely helpful in letting us at least try to get a look at some of the numbers here. So, I would like to thank you very much for your testimony.

Senator McCLURE. Just one, if I might, Mr. Chairman, because the point has been made two or three times. The assumption is made by the Bureau that people who are not employed as a result of the project would get employment somewhere else. I think that summarizes your statement. Is that not correct?

Mr. DUFFUS. The Bureau assumes that they would be unemployed and earn no income for this 100-year period. In other words, the Bureau overstated the profits from the farm because it omitted the farmers' labor costs. I think that on the basis—

Senator McCLURE. I was talking about the question whether these people would be employed somewhere else.

Mr. DUFFUS. That is correct. Yes.

Senator McCLURE. And you have said, well, if they were not working on the farm or on these projects, they would be working somewhere else.

Mr. DUFFUS. Over the 100 year life of the project.

Senator McCLURE. Over 100 years. That is a great comfort to somebody who is trying to pay the bills this month.

[Laughter.]

Senator McCLURE. But aside from that, where else would they be working?

Mr. DUFFUS. I do not think we can answer that question.

Senator McCLURE. Do you know what the unemployment rate is in these rural communities?

Mr. DUFFUS. No, I do not.

Senator McCLURE. Do you know what the unemployment rate is among the Indian tribes affected?

Mr. DUFFUS. No, I do not.

Senator McCLURE. Do you know how long unemployment rates have persisted at levels above average or norms for the country?

Mr. DUFFUS. No, I do not.

Senator McCLURE. Thank you, Mr. Chairman.

Senator BRADLEY. Thank you very much, Mr. Duffus, for doing the analysis and for providing the committee with the work product.

Mr. DUFFUS. Thank you, Mr. Chairman.

Senator BRADLEY. Our next witness is the Honorable Dennis Underwood, the Commissioner of the Bureau of Reclamation. Mr. Underwood, welcome to the subcommittee. It is always good to see you, and the floor is yours.

**STATEMENT OF DENNIS B. UNDERWOOD, COMMISSIONER,
BUREAU OF RECLAMATION, DEPARTMENT OF THE INTERIOR,
ACCOMPANIED BY ROLAND G. ROBISON, REGIONAL DIRECTOR,
UPPER COLORADO REGION, SALT LAKE CITY, UT; AND LEE J.
McQUIVEY, ASSISTANT PROJECTS MANAGER, UTAH PROJECTS
OFFICE, PROVO, UT**

Mr. UNDERWOOD. Mr. Chairman, I brought a couple people to share this experience with me.

[Laughter.]

Mr. UNDERWOOD. To my left, I have Roland Robison who is the Regional Director of the Upper Colorado Office, and Lee McQuivey who is the Assistant Projects Manager for the Central Utah Project.

Before I start, Mr. Chairman, I would like to request that my statement be made part of the record. In addition to that, there is a statement of some principles for the administration's support of the legislation. I would also like to have that made part of the record.

Senator BRADLEY. Your full statement will be in the record.

Mr. UNDERWOOD. Before I comment on the legislation, I would like to just briefly go through the Colorado River Storage Project and some background information for you.

The Central Utah Project, which I know you are aware of, is a component of the Colorado River Storage Project which was authorized in 1956. Congress has increased authorized ceilings in 1972 and 1988. The current ceiling indexed to the October 1990 price levels plus the cost of general legislation brings the current ceiling estimate to be \$2,229,177,000. The total cost of the Colorado River Storage Project, meaning all of the components, is currently \$2,938,059,000.

Senator BRADLEY. Would you say this again please?

Mr. UNDERWOOD. The current ceiling indexed for October 1990 price levels plus the estimated cost for general legislation is \$2,229,177,000. The total cost of the Colorado River Storage Project as authorized is \$2,938,059,000. That means if you were going to build the project as authorized, you would have over \$700 million at October 1990's prices that would be needed in addition to the current ceiling.

This can be obviously reduced if you are looking at various project features by either deletion or some modification of features.

The status of the Bonneville Unit of the Central Utah Project—and I will just give you a status of that. Today the project is 62 percent complete. The Strawberry collection system is 99 percent complete. The municipal and industrial system is 79 percent complete. The Diamond Fork system is about 29 percent complete. With the 1991 appropriations, the project will be about 68 percent complete.

With current authorized ceilings we are able to complete the Strawberry collection system, the municipal and industrial system and associated section 8 fish and wildlife and recreational facilities. We need an additional ceiling to complete the Diamond Fork system and to construct the irrigation and drainage system and associated section 8 measures.

I would like to also reinforce what the Utah delegation has said in terms that the project has had continued State support, wide support. It constitutes a major part of the plumbing of the State water plan. It is important to the State and it also provides for enhanced opportunities for water resources management. It reflects the State water allocation decisions which we prescribe to the State primacy in those regards.

The State has conducted an in-depth review of the project in 1984. The project has received extensive environmental review and public comment. The Bureau updated its definite plan report in 1988.

And now from that background, I would like to move to the comments on the legislation itself.

The legislation before the subcommittee today is extremely complex—and I think everybody has acknowledged that—and raises a number of issues that frankly go beyond the simple question of just a ceiling increase. We are well aware of the efforts by the Utah delegation and all of the involved parties, and I commend them for those efforts, those continuous efforts. We too have devoted a great deal of time and effort in reviewing the legislation and the issue itself.

The administration is willing to support an increase in the authorized appropriation ceiling for the Central Utah Project, including construction of an irrigation and drainage system, subject to established administration policy regarding water resources development and the use of contemporary economic and environmental criteria. We have developed specific principles upon which the administration's support is contingent. In order for the administration to find this bill acceptable, it must be amended to conform to these principles. Those principles, Mr. Chairman, were the ones that I made reference to a few minutes ago. I will attempt to highlight those as opposed to going over those in detail.

With regard to title I, the administration supports the requirement—before I do that, the principles that I am going to highlight—substantial amount of those are included in the legislation and I will try to note those when I indicate to you the support of the administration. Obviously, those are the parts that are already within the legislation itself.

The administration supports the requirement that a revised definite plan report be prepared. We believe the completed DPR must be consistent with the principles and guidelines and a defined national economic development plan. The DPR must examine alternatives that will minimize the capital investment, but at the same time enhance both repayment and sound water resource management opportunities. We believe the definite plan report should include an evaluation of non-structural measures, including water conservation and conjunctive use of groundwater. Both of those are addressed in the bill.

The administration supports legislation recognizing that the requirements of the National Environmental Policy Act of 1969 must be satisfied to obligation of funds for construction.

We also concur with the language in title I requiring 90 percent of the system capacity to be under binding contract with agricul-

tural water users, the same as Senator Garn has previously mentioned.

We also support the provision requiring a 10 percent of full surcharge on delivery of project water to surplus crops.

Likewise, we are encouraged and strongly support the bill's requirement for 35 percent local cost sharing—and again, I would like to highlight what has already been addressed, that this is real money and hard cash—and commend the project sponsors for their apparent willingness to provide that level of support.

Repayment for the remaining irrigation components must be subject to approval by the Secretary of the Interior and reflect current administration cost recovery policies, including straight line amortization.

The administration does not oppose the concept of completion of the project by local interests using the Drainage and Minor Construction Act of 1956 as the funding mechanism. We are concerned with some oversight, and that is provided for in the 1956 act. Secretarial oversight and involvement in the program and obtaining of funds, provides oversight in the finalization of preconstruction reports, including appropriate NEPA compliance and also provides for appropriate level of oversight of design and construction activities.

We do, though, have some concerns relative to the drainage and minor construction contracting process. We believe that it is critical, prior to obligation of construction funds, that terms and conditions must be defined and approved by the Secretary that adequately protect the interests of the United States and clearly resolve the issues of liability associated with completion, repairs, damages, and any post-construction deficiencies that may occur.

The administration also believes that——

Senator BRADLEY. Could you repeat that please?

Mr. UNDERWOOD. Sure.

We believe it is critical, prior to the obligation of construction funds, terms and conditions must be defined and approved by the Secretary of the Interior that adequately protect the interests of the United States and clearly resolve the issues of liability associated with completion, repairs, damage and any post-construction deficiencies that may occur. What we are looking at here, Mr. Chairman, is that if somebody is going to be responsible for that construction, then they have to assume the other responsibilities that go with that.

The administration also believes that S. 2969 should include language to repeal the penalty provisions of Public Law 99-591. What that does, Mr. Chairman, is that there was a commitment of \$2-million-a-year penalty if the Bonneville Unit was not completed by 1995. We are seeking relief of that for the Government.

With respect to title II, the legislation establishes Utah reclamation mitigation and conservation commission. It is the position of the administration that any such commission must not interfere with the duties of the Secretary under the Fish and Wildlife Coordination Act, and it must also allow the Secretary to retain a level of oversight and authority regarding use of appropriated funds that is consistent with other statutory obligations. Our support of such a commission would also be contingent upon a deter-

mination by the Department of Justice that it does not raise issues of constitutionality. Those have been posed to us, and we would be concerned that those are addressed.

Senator BRADLEY. Have those been posed to Justice?

Mr. UNDERWOOD. Yes.

Senator BRADLEY. How quickly will they have an answer?

Mr. UNDERWOOD. I could get back to you on that.

Title II also authorizes an array of mitigation, enhancement and recreational activities both within and outside the project area. The administration supports mitigation measures and projects identified in the May 1988 draft definite plan report and, of course, would support any measures identified in the revised definite plan report prepared pursuant to title I. It is our belief that these activities should be included as project costs allocated among project purposes and financed and repaid accordingly.

However, there are several activities authorized by title II that are actually enhancement efforts. The administration believes that such measures authorized by the legislation should be federally funded and if accompanied by an agreement by the Secretary, to provide 50 percent up-front cost sharing from non-Federal sources. If there is a legitimate Federal interest, as defined by the Secretary, it would also require feasibility planning and environmental studies to be completed. These particular cases we have asked our staff and the Fish and Wildlife Service to go over these activities, proposed measures and enhancement and look for Federal interests. And we believe that there is some that do have some Federal interests, but we believe that they should be cost-shared on a 50/50 basis. This is an enhancement as opposed to what we consider mitigation.

With respect to title III of S. 2969—

Senator BRADLEY. So, you think there should be cost sharing of the enhancement?

Mr. UNDERWOOD. Correct, where there is a defined Federal interest. Again, it is pretty hard to be against environmental enhancement, but it gets down to the point of how do you pay for it. And what we are saying is that there should be a responsible division of sharing of those costs.

With respect to title III of the act, it establishes a Utah reclamation mitigation and conservation account for the purpose of ensuring environmental protection and mitigation enhancement in relation to the Colorado River Storage Projects within the State of Utah. It does raise some questions about the obligation of Federal funds for measures that have not been planned or yet identified. Appropriate mitigation plans for the Central Utah Project have been approved and through existing procedures or will be in conjunction with the preparation of an updated definite plan report.

If a fund is to be established to finance additional activities in the future, the administration believes that no Federal funds should be obligated for enhancement activities that are either unknown, unplanned or lacking in adequate justification at this time.

In addition, if a post-construction fund is to be created, provision should be made to ensure that it does not adversely impact project repayment and its financing is derived from either project beneficiaries or beneficiaries of the post-construction activities.

With regard to title IV, the administration's position is that any settlement should be based on the results of negotiation conducted under the criteria and procedures for participation of the Federal Government and negotiation for the settlement of Indian water right claims. The administration was not a party involved in the development of the provisions contained in title IV. Thus, we are opposed to this legislative settlement.

Senator BRADLEY. I am sorry. What was your last point? You are opposed, but what is the problem?

Mr. UNDERWOOD. The administration was not a party to the development of the provisions contained in title IV. Consequently, we oppose the legislative settlement. Again, it is in support of the administration position that we seek settlements through negotiations.

Senator BRADLEY. You mean you oppose without addressing the substance. You just oppose because you were not——

Mr. UNDERWOOD. Correct. Let me just go on a little bit and make one comment.

Justice Department has reviewed the tribe's potential claim and has informed us the \$240 million far exceeds the maximum potential legal liability to which the claim would expose the United States. What we are saying is the administration's position is to negotiate these settlements, and taking a look at the claims, we believe that they are in excess of the potential legal liability.

Senator GARN. I might add, Mr. Chairman, there are some on the other side who feel that if they negotiated, it would cost a great deal more than the legislative settlement.

Senator BRADLEY. I know that.

Mr. UNDERWOOD. With that, Mr. Chairman, I would be happy to answer questions.

I would like to make a remark to Senator Garn, and this has to do with the—in terms of acting in good faith and timeliness of providing input to the Senator. And I am guilty of that. We have been 3 months in the process of trying to provide some input, and we were not timely in that effort. And I share in that responsibility, along with other parts of the administration, and I would like to acknowledge that.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Underwood follows:]

PREPARED STATEMENT OF DENNIS B. UNDERWOOD, COMMISSIONER, BUREAU OF RECLAMATION, DEPARTMENT OF THE INTERIOR

Mr. Chairman, the legislation before the subcommittee today is extremely complex and raises a number of serious issues that frankly go well beyond the simple question of a ceiling increase. Likewise, S. 2969 authorizes, at a minimum, \$679 million in additional Federal funding for Central Utah Project completion and related activities. The bill also authorizes a settlement for the Ute Indian Tribe that totals about \$240 million if credits are included. We are well aware of the monumental efforts that have gone into this proposal and of the diverse interests which have contributed to the long and difficult process of crafting the legislation as it appears today.

Recognizing these efforts, as well as the importance of this project to the State of Utah, we too have devoted a great deal of time and effort to reviewing both the legislation itself and the issues it raises.

Based on this review, the Administration is willing to support an increase in the authorized appropriations ceiling for the Central Utah Project, including construction of an Irrigation and Drainage System, subject to established Administration

policy regarding water resource development and the use of contemporary economic and environmental criteria.

As these policies relate to this legislation, we have developed specific principles upon which Administration support is contingent. The Department of the Interior opposes enactment of S. 2969. In order for the Administration to find this bill acceptable, it must be amended to conform with these principles. With your permission I would like to submit the full text of these principles for the record, and summarize them for the purposes of today's hearing. It is our hope that these principles will be incorporated into the bill by the subcommittee during its deliberations. In addition, as this legislation moves through the process, we would appreciate the opportunity to address technical concerns that may arise. Should any additional titles be added to S. 2969 we would reserve the right to reevaluate our position.

In regard to Title I, which provides for project construction, the Administration strongly supports the requirement that a revised Definite Plan Report be prepared. We believe the completed DPR must be consistent with the Principles and Guidelines and define a National Economic Development Plan.

Likewise, we believe the DPR must examine alternatives that will minimize the capital investment in construction, while enhancing both repayment and sound water management opportunities. In addition to reassessing specific features of the I&D System and features of the Diamond Fork System contingent on the configuration of the I&D System, we believe the DPR should include an evaluation of non-structural measures, including water conservation and conjunctive use of groundwater.

The Administration also strongly supports the legislation's recognition that the requirements of the National Environmental Policy Act of 1969 must be satisfied prior to the obligation of funds for construction. Assuming that NEPA compliance mandates the preparation of an Environmental Impact Statement (EIS) on the I&D System, it must be coordinated with the preparation of the final Definite Plan Report.

We also concur with the language in Title I requiring 90 percent of system capacity to be under binding contract with agricultural water users, as well as the provision requiring a 10 percent of full cost surcharge for delivery of project water to irrigate surplus crops.

Likewise, we are encouraged by and strongly support the bill's requirement of 35 percent local cost-sharing and commend the project sponsors for their apparent willingness to provide that level of support.

Repayment for the remaining irrigation costs must be subject to approval by the Secretary of the Interior and reflect current Administration cost recovery policies, including straight-line amortization.

Further, the Administration does not oppose the concept of completion of the project by local interests using the Drainage and Minor Construction Act of 1956 as the funding mechanism. The 1956 Act requires Secretarial oversight and involvement by Reclamation to program and obtain funding, provides oversight in the finalization of preconstruction reports including appropriate NEPA compliance, and provides an appropriate level of oversight of design and construction activities.

We do, however, have some concerns relating to the specifics of how the D&MC contracting process will be applied to the completion of such a substantial construction project. We believe it is critical that, prior to the obligation of construction funds, terms and conditions must be defined and approved by the Secretary of the Interior that adequately protect the interest of the United States and that clearly resolve issues of liability associated with completion, repairs, damages, and any post-construction deficiencies that might occur.

The Administration also believes that S. 2969 should include language to repeal the penalty provisions of P.L. 99-591.

Mr. Chairman, Title II of S. 2969 establishes a Utah Reclamation Mitigation and Conservation Commission for the purpose of coordinating the mitigation and conservation provisions of the legislation. It is the Administration's position, as outlined in our statement of principles, that any such Commission must not interfere with the duties of the Secretary under the Fish and Wildlife Coordination Act. It must also allow the Secretary to retain a level of oversight and authority regarding the use of appropriated funds that is consistent with other statutory obligations.

Our support for such a Commission will also be contingent upon a determination by the Department of Justice that it does not raise questions of constitutionality. As currently written, we are concerned that the language of S. 2969 does not meet these criteria.

Title II also authorizes an ambitious array of mitigation, enhancement, and recreation activities both within and outside the project area. The Administration strongly supports those mitigation measures and projects identified in the May 1988, Draft DPR. We would, of course, also support any such measures identified in a revised DPR prepared pursuant to Title I. It is our belief that these activities should be included as project costs, allocated among project purposes, and financed and repaid accordingly.

Title II goes far beyond the mitigation requirements, identified in the May, 1988, draft DPR. These requirements will, of course, be reviewed in a new or updated, DPR. It appears, however, that several of the activities authorized by Title II are actually enhancement efforts. While we appreciate the potential benefits of these efforts, the administration believes that such measures authorized by the legislation should only be federally funded if accompanied by an agreement with the Secretary to provide 50 percent upfront cost-sharing from non-Federal sources, if there is a legitimate Federal interest as determined by the Secretary, and after appropriate feasibility, planning, and environmental studies have been completed.

Title III of S. 2969 establishes a Utah Reclamation Mitigation and Conservation Account for the purpose of ensuring environmental protection, mitigation, and enhancement in relation to CRSP projects within the State of Utah.

Again, while we appreciate the environmental goals that this fund seeks to pursue, it raises concerns about the obligation of Federal funds for measures that have not been planned or even yet identified. Appropriate mitigation plans for the Central Utah Project have already been approved through existing procedures, or will be in conjunction with the preparation of an updated DPR.

If a fund is to be established to finance additional activities in the future, the Administration believes that no Federal funds should be obligated for enhancement activities that are either unknown, unplanned, or lacking in adequate justification at this time.

Likewise, if a post-construction fund is to be created, provisions should be made to ensure that it does not adversely impact project repayment, and that its financing is derived from either project beneficiaries or the beneficiaries of the post-construction activities.

In regard to Title IV, which embodies a proposed settlement with the Ute Indian Tribe, the Administration maintains that any such settlement should be based on the results of negotiations conducted under the "Criteria and Procedures for the Participation of the Federal Government in Negotiations for the Settlement of Indian Water Rights Claims" (Federal Register, Vol. 55, No. 48, March 12, 1990). The Administration was not a party involved in the development of the provisions contained in Title IV, thus we oppose this legislative settlement. Moreover, I note that the proposed Ute settlement would cost the Federal Government more than \$20 million. In return, the Tribe would agree not to bring a claim based on the alleged breach by the United States of a 1965 Agreement with the Tribe. The Justice Department has reviewed the Tribe's potential claim and has informed us that \$240 million far exceeds the maximum potential legal liability to which the claim would expose the United States.

Mr. Chairman, we will be pleased to provide our comments on Titles V through XXIV for the record at a later date. Thank you, Mr. Chairman, and I am prepared to answer any questions the Subcommittee may have.

[Attachment.]

The Administration would support legislation to increase the authorized ceiling for the Central Utah Project, including an irrigation and drainage system, subject to established Administration policy on water resources development implementing contemporary economic and environmental criteria.

These principles provide a framework within which we believe the support of the Administration can be secured.

I. TITLE I—CENTRAL UTAH PROJECT CONSTRUCTION

A. Prior to obligation of construction funds for an Irrigation and Drainage (I&D) System and Bonneville Unit features dependent upon configuration of an I&D System: e.g. (1) Monks Hollow Dam, (2) Sixth Water Aqueduct, (3) Diamond Fork Pipeline, (4) Wasatch Aqueduct, or functional replacements, a revised Definite Plan Report (DPR) must be prepared and approved by the Administration.

The completed DPR must:

1. Be consistent with the Principles and Guidelines (1983) and define the National Economic Development Plan.

2. Limit federally financed construction for irrigation water supply facilities to no more than those needed for supplemental irrigation acreage referred to in the May 1988 Draft DPR.

3. Examine alternatives that will minimize the capital investment and enhance repayment and improve water management opportunities. At a minimum, this assessment must include an evaluation of:

—The elimination of Monks Hollow Dam and Reservoir from the project through consideration of conjunctive ground water use and reduced water supply deliveries.

—Sizing and location of Bonneville Unit features dependent upon configuration of an I&D System (listed in I-A).

—Non-structural measures, including water conservation, conjunctive use of groundwater throughout the project service area, and ground water recharge and management programs for improved systemwide and area of origin water resources management.

—Consideration given to project features/enhancements not defined as a part of the NED plan. (All such features and/or enhancements must be 100 percent upfront financed by non-Federal interests.)

B. Prior to the obligation of construction funds, an Environmental Impact Statement for the I&D System must be prepared, integrated into the DPR (including cost estimates), and finalized.

C. Construction will not be initiated on any feature that would foreclose or presuppose selection of any of the alternatives to be considered in the DPR.

D. Preconstruction requirements must also include:

1. 90 percent of system capacity under binding contracts with agricultural water users, covering construction repayment and full OM&R costs.

2. Crop production charge equal to 10 percent of full cost as defined in section 202(3) A-C of the Reclamation Reform Act (RRA) of 1982 for delivery of project water to irrigate any crop which is federally subsidized.

3. Contractual agreement with the Secretary to provide upfront non-Federal financing. That agreement must:

—Require no less than 35 percent non-Federal cost-sharing concurrent with construction for the I&D System and other Bonneville Unit features outside the current appropriation ceiling, as well as Uinta Basin replacement project features.

—Include no credits for features not constructed (e.g., Mosida) or for contributions to other activities not related to I&D System or Uinta Basin construction.

E. Repayment of all irrigation features (including costs assigned to power uses) must be consistent with current Administration cost recovery policy. No development period is allowed for costs assigned to power users.

F. Prior to the obligation of construction funds, terms and conditions must be defined and approved by the Secretary by which the Central Utah Water Conservancy District could construct, operate, and maintain features of the Central Utah Project, should such authorization be given to the District. Such terms and conditions must include the assumption by the District of responsibility and liability for repairs, completion of features, damages, and any post-construction deficiencies.

G. Preconstruction requirements, cost-sharing, and repayment principles outlined for Bonneville Unit construction must also be applied to any Uinta Basin development authorized by the legislation.

H. The penalty provisions of P.L. 99-591 must be repealed.

I. The Secretary must be allowed discretion to reexamine the cost allocations on which Bonneville Unit repayment is based to insure consistency with actual water use.

J. Comprehensive water conservation plans are to be completed by the Central Utah Water Conservancy District and approved by the Secretary for each component of the Central Utah Project. Such plans are to be the responsibility of the District.

K. Water resources management investigations, not part of the DPR, to allow for groundwater recharge, groundwater management, and the conjunctive use of ground and surface waters may be federally financed up to 50 percent of the costs of the investigations. This bill provides no Federal authorization to implement any recommendations derived from such water resources management investigations.

L. Facilities to enclose, pressurize, and develop sprinkler, irrigation system to increase efficiency, enhance beneficial uses, and achieve greater water conservation, are to be the responsibility of the District.

M. Forgiveness of a portion of the repayment obligation of the Uinta Water Conservancy District for the Jensen Unit must be specifically and fully justified to the Administration's satisfaction in any enabling legislation. Provisions prohibiting marketing of water outside State boundaries must be deleted.

II. TITLE II—FISH, WILDLIFE, AND RECREATION MITIGATION AND CONSERVATION IN THE CENTRAL UTAH PROJECT

A. Establishment of a Central Utah Project Mitigation and Conservation Commission, or other similar entity must, at a minimum, meet the following criteria:

1. Authorities and activities of the Commission will not interfere with the duties of the Secretary under the Fish and Wildlife Coordination Act.

2. The Secretary must retain a level of oversight and authority regarding the use of appropriated funds that is consistent with other laws and statutory obligations. Support of such a Commission by the Administration will be contingent upon a determination by the Department of Justice that the bill does not raise questions of constitutionality.

(Note: The Administration will work with the Utah Delegation and appropriate Committees to develop acceptable language, if necessary.)

B. The mitigation to be authorized in Title II will consist of only those measures/projects identified in the May 1988 DPR—or as revised by the DPR required in Title I (except as provided in II-D)—and will be included as a project cost, allocated among project purposes, and financed and repaid accordingly.

C. Measures/projects authorized by legislation which are not identified as mitigation for project impacts should only be funded if:

1. Accompanied by an agreement with the Secretary to provide 50 percent upfront cost-sharing from non-Federal sources.

2. There is a legitimate Federal interest as determined by the Secretary.

3. Appropriate feasibility, planning, and environmental studies have been completed.

D. If the proposed Utah Lake Salinity Project is authorized, it should be included as a project cost and financed and repaid accordingly.

E. All costs allocated to recreation will be cost shared 50/50 by non-Federal interests.

III. TITLE III—UTAH RECLAMATION MITIGATION AND CONSERVATION ACCOUNT

A. The environmental impacts of the Bonneville Unit have been fully evaluated for all features constructed or under construction. Mitigation plans have been approved, and will be updated in a revised DPR and EIS for the I&D System. Federal funds must not be obligated for mitigation or enhancement activities that are either unknown, unplanned, or lacking in justification at this time.

B. If CRSP revenues are to be used to fund post-construction activities, they must not be credited to repayment of construction.

C. Should a post-construction fund be established, provision should first be made to develop a funding mechanism which:

1. Does not adversely impact project repayment.

2. Requires funding exclusively by project beneficiaries and beneficiaries of the post-construction activities.

3. Does not require the obligation of Federal funds for unknown activities or projects which lack justification or a determination of feasibility according to established contemporary guidelines.

IV. TITLE IV—UTE INDIAN RIGHTS SETTLEMENT

Any settlement with the Ute Indian Tribe should be based on the results of negotiations conducted under the recently promulgated "Criteria and Procedures for the Participation of the Federal Government in Negotiations for the Settlement of Indian Water Rights Claims" (Federal Register, Vol. 55, No. 48, Monday, March 12, 1990, pages 9223-9225). The Administration was not a party involved in the development of the provisions contained in Title IV, thus we oppose this legislative settlement.

Senator BRADLEY. Thank you very much, Mr. Underwood, for your testimony. I must say that you do raise a number of questions that I hope through our own questioning we might find the basis for your testimony.

I will allow Senator Garn to go, and then I will clean up.

Senator GARN. Well, thank you for your courtesy, Mr. Chairman, or if it helps, I will call you Mr. President again.

[Laughter.]

Senator GARN. Let me follow up on my opening remarks. Mr. Underwood has tried for several months to bring this together. He personally has been very helpful, has met with me on numerous occasions. But overall the administration has not been helpful. These meetings started in the spring and we had several deadlines so that we were not trapped in this late part of the session. Those deadlines time after time were not met. I believe this is primarily the responsibility of OMB, and I believe that it is primarily OMB—I may be wrong—who has had these last-minute changes from understandings that I previously had. So, while I appreciate Mr. Underwood personally and my relationship with him, I do not retract a single remark I said in my opening statement about the end results of that. Dennis has tried very hard and is a true professional in talking about the plumbing of the system and how we get it together and all of that.

But some of the things—and I will not take the time, Mr. Chairman, at this point to go through all of the disagreements with the administration's testimony, but I do certainly want to comment on one part of it. When they talk about the principles and guidelines that they are talking about on the I&D system, this gets back to the point I was making with GAO. It isolates the I&D, makes it stand-alone on a cost-benefit analysis. Again, I am not aware that this has ever been imposed on any other project. The Senator from Kentucky, Senator Ford, came over and spoke in some detail about his comment about let us examine each dam on the Ohio River one by one and see what happens to that. I just do not understand the administration pushing us in that direction when it has never been done before.

And so, I would hope the administration would recognize how important this is to the State of Utah and negotiate in good faith and recognize that this is not a bill that, if I wrote it, would be in this form. If the environmentalists wrote it, it would be different. But under the circumstances of all of the very different viewpoints over the last years on this project, this is a good compromise. And if you do not have compromise on this bill, there will be no bill. So, I would hope the administration would recognize that and realize all of the time and effort that has gone into this and recognize that at my invitation they had been more involved in those daily negotiations, many of these things could have been resolved. The administration has not had the impact on this bill that if they had been a participant.

Now, I really do not care whether this is a Republican or a Democratic administration. That has nothing to do with it. There is nothing Republican or Democratic about the need for water or the need to irrigate fields or furnish water to factories or to people to drink. It is not partisan. So, I do not bring this up in a partisan manner at all. That is not the issue.

There is a public need that I have outlined many, many times until people are tired of listening to me. I hate to do this publicly, but if it is the only way I can get the word to the administration of how vital this project is to our State and be part of the negotiations rather than sitting outside and waiting till the last minute and then coming up with a statement of guidelines and principles that

have never been done to any other project, then that is the way I am going to do it. I fought with the Carter administration. I fought with the Reagan administration. I will fight with the Bush administration if that is necessary because I was not elected to represent any other part of this country except the State of Utah, and that is what I am going to do. Just like Senator Bradley does a good job of representing New Jersey and Senator McClure does a good job of representing Idaho, well, I am going to do a good job of representing Utah.

Dennis, despite our good personal relationship, if OMB does not get the word from what I am saying today, I hope you relay it personally. If not, I will start with Sununu, and if that is not high enough, I will start with the President and tell him how his administration is behaving.

Thank you, Mr. Chairman.

Senator BRADLEY. Thank you very much, Senator Garn.

Senator McClure.

Senator McCLURE. I will not take long, but I do want to explore just a couple of areas that are raised by the statement.

On page 4 you are referring to title II that establishes the Utah Reclamation Mitigation and Conservation Commission. And in the middle of that paragraph you say have to be sure that the commission must not interfere with the duties of the Secretary under the Fish and Wildlife Coordination Act.

How do you see the commission, as structured in the bill, as interfering with those duties? Precisely what is it you are afraid of?

Mr. UNDERWOOD. The particular case, Senator, the commission is looking at and coming up with measures or identifying mitigation or enhancement measures which we feel are really the responsibility of the Secretary under the Fish and Wildlife Coordination Act in terms of implementation and protection of fish and wildlife conservation.

Senator McCLURE. Would I understand from that statement that it is the administration's position that nobody but the Secretary can do any of those things?

Mr. UNDERWOOD. We believe that is the appropriate place. We believe that there is appropriate roles for people to be advisory, the same way as there is presidential advisory commissions and things like that that can advise the Secretary.

Senator McCLURE. Certainly the Secretary has duties under the Fish and Wildlife Coordination Act. No one will question that. But if I understand your response, what you are saying is no one else can play in that game. That is his game and he is the czar. Is that correct?

Mr. UNDERWOOD. Correct.

Senator McCLURE. Well, allow me to take a little exception to that statement. I have great respect for the Office of the Secretary. I have great respect for the man who occupies that office today. But there are other players around as well. I do not want to interfere with his duties, but I think the concept that because he has duties, nobody else can exercise any discretion is a rather bizarre application of a theory of law.

I see it in a couple of other places in your statement as well. That is the reason I take a little time.

Mr. UNDERWOOD. Senator, I think what I was trying to say in terms of carrying out his duties is that I recognize that he would be obviously coordinating with State interests and other interests.

Senator McCLURE. Well, he coordinates, but he tells them. That is what I understand you to say. Nobody else can tell him. He can tell them.

Mr. UNDERWOOD. No.

Senator McCLURE. That is not what you mean.

Mr. UNDERWOOD. No.

Senator McCLURE. Okay. We at least have some coordination now with State agencies.

Mr. UNDERWOOD. Correct.

Senator McCLURE. But you do not want to coordinate with this commission. So, we cannot in the Congress create any other mechanism through which he can coordinate activities.

Mr. UNDERWOOD. I think it is a matter that he can coordinate. I think what was the idea of it that it would be replacing the Secretary's duties. I think that is what we were concerned with.

Senator McCLURE. Well, there are some people who do not have the same high regard for the Secretary that I have that even believe that maybe somebody else could do it better or certainly could do it as well.

On page 6, I see you do not want any mitigation plans that have not already been approved. You do not want anybody else to come with any new ideas. Do I read that correctly?

Mr. UNDERWOOD. No. Except in the particular case, we are going to go back and look at an updated definite plan report, and there may be some other mitigation included in there.

Senator McCLURE. But you do not want anybody to do anything outside the definite plan report. That runs through your statement. We have to have a DPR, and we have to run it through the regular processes, and do not anybody mess around with our processes.

Mr. UNDERWOOD. I think in the particular case it still gets into use of Federal funds in terms of carrying those out.

Senator McCLURE. In some respects, that is true.

I also see it in that remarkable statement that I do not think is yours that since we did not negotiate this settlement, we are opposed to it. It does not have to do with whether it is good or bad, good for the Indians or bad for the Indians, good for the taxpayer, bad for the taxpayer. It has nothing to do with substance. It has only to do with turf. I did not do it; therefore, I am opposed.

Mr. UNDERWOOD. If I had portrayed it that way, it should not be. We did take a look, like I indicated, as to the potential liability, and we are being counseled in that arena, but then by same token, like Senator Garn pointed out, people could be counseling people on the other side saying that it could cost twice as much. But from our assessment, we believe—and not being a party to it all—that it may be excessive of what the potential liability is.

Senator McCLURE. Well, I will guarantee if the Department of Justice gets involved, it will cost more, let alone the time that it takes.

I noticed that the GAO says if you are not employed here, you will be employed somewhere else. That might apply to some of the Federal bureaucrats too.

[Laughter.]

Senator McCLURE. On page 5, in the lower half of the page in the first full paragraph below the middle, it says it appears, however, that several of the activities authorized by title II are actually enhancement efforts. I suspect the authors of the bill would proudly proclaim that, and you find it a reason to be a criticism.

Mr. UNDERWOOD. Senator, I said how can you be against environmental enhancement. You cannot. But I think it gets down to how do you pay for it. And what we are looking at here is if you identify ones that are outside the mitigation of the project, and they are truly enhancement, and maybe even out of the service area, that how do we apportion? Is the Federal Government always going to be the ones that is paying for that enhancement. And that is what we are looking at. Is there a Federal interest, and if there is, can we cost share?

Senator McCLURE. I can understand that concern, and I do not even quarrel with the principle that is involved except where you have a bill that is balanced with a whole lot of different components each balanced against the others. And in the negotiation of this legislation, if I understand it, there have been a lot of people who have been involved in trying to balance the several interests that are involved, and they said this is the way we solved some of those balances. And I suspect those who would demand some enhancement features say, well, we demand that because there are other features in the bill. It seems to me that is not an inappropriate way of making policy judgments of balancing different provisions and different actions by the Government. I think again it is maybe not quite fair to come in and say, well, now we are going to pull out the enhancement and say that has to reach ordinary criteria as though there were no bill and no balancing against other features.

Thank you very much, Mr. Chairman.

Senator BRADLEY. Thank you, Senator McClure.

Mr. Underwood, I take it from your testimony that one of the areas where you have a problem is the provision that would allow the Central Utah Water Conservancy District to be responsible for completing construction. Is that correct?

Mr. UNDERWOOD. It is not I think the area—and there is specific areas of concern. Like I said, we are not opposed to having them construct the project. It is more in the Federal oversight, making sure that adequate inspections, making sure review and oversight of designs, et cetera, in the public interest when there is going to be Federal money involved.

Senator BRADLEY. I thought I heard you also say that you had questions about liability, damages, post-construction deficiencies.

Mr. UNDERWOOD. Correct. That is the other part.

Senator BRADLEY. What specifically is your problem?

Mr. UNDERWOOD. We believe in particular case if in fact somebody is going to construct a project and, say, if there was problems in terms of repairs because the work was not performed correctly, if somebody is going to assume the responsibility for construction,

then there is certain liabilities that potentially could come along with that. One is what happens if they did not complete the project? Who is going to be responsible for completing the project? In the particular case of repairs, if there is something because—additional costs, who is going to assume those costs of repairs? Or if there is damages or if there is some deficiencies that are established after post-construction. That does not say that even some of our projects we have not had deficiencies in the past, but you need to have the terms and conditions. In other words, what we are saying, that those need to be spelled out in advance.

Senator BRADLEY. Is your concern to the situation where the project may be completed and if there is faulty design? Is that your problem?

Mr. UNDERWOOD. That or construction. It goes hand in hand as obviously the design. We would have potentially have oversight if that was provided for, and it is under that act. But there is also the inspection of the construction and the construction practices themselves. We would have some people involved, but not to the degree that we would have if we were totally responsible for the project. So, there has to be some kind of assumption of some of those risks that are associated with potentially faulty construction practices.

Senator BRADLEY. And what would be your specific suggestion as to how to deal with that?

Mr. UNDERWOOD. What we are asking for here really is to have an opportunity to have terms and conditions be defined and approved by the Secretary; in other words, there is some opportunities to talk on a cooperative basis with the district and define who is going to be liable for these aspects.

Senator BRADLEY. But how does that get at the liability question?

Mr. UNDERWOOD. Because that would define in those terms and conditions as who would be liable for various practices.

Senator BRADLEY. Well, but I think that what people want to know is basically what are the rules so they can go ahead and do the job.

Mr. UNDERWOOD. Mr. Chairman, that is what we are saying, though. We are talking about prior to obligation of construction that those terms and conditions, so you would know the rules, be laid out prior to that time.

Senator BRADLEY. Well, are you aware of the dispute or the discussion about the Jordanelle Dam and the various earthquake vulnerabilities?

Mr. UNDERWOOD. Yes.

Senator BRADLEY. Does this come to your mind as you think about these sections?

Mr. UNDERWOOD. Not in this particular case because I think I am professionally satisfied that that is a very safe dam. And looking at the panels and the consultants that they have used, there has been a lot of redundancy in that regard, and I would support that.

Now, this particular case, if somebody else was constructing, we may not be providing the inspection that would have otherwise occurred. So, what we are saying is if we are not going to be playing that role in terms of a construction inspectors, then somebody has to assume that responsibility to ensure that it is safely completed.

Senator BRADLEY. And your suggestion is?

Mr. UNDERWOOD. That we work with the district and establish those terms and conditions up front as to who is going to be liable; in other words, there is no questions later on. If there is damage or if there is repairs, or if there needs to be some post-construction measures, that these be addressed in a document prior to the time of obligating construction funds.

Senator BRADLEY. On the Jordanelle Dam, are you satisfied it was built to withstand an earthquake of what? About 7.5 magnitude?

Mr. UNDERWOOD. I believe it is in that neighborhood, yes.

Senator BRADLEY. And there have been some recent reports the maximum earthquake would be like 7.7. So, the question is are you concerned at all about the disparity?

Mr. UNDERWOOD. I have been exposed to all of the consultants and their findings, and I believe that they have been adequately addressed. I believe the findings of the consultants that indicate that it is a sound site.

Senator BRADLEY. Have you done a dynamic analysis of the dam so that you are sufficiently assured that it would withstand 7.7?

Mr. UNDERWOOD. Personally? No.

Senator BRADLEY. Has the Bureau?

Mr. McQUIVEY. The Bureau has made that analysis for a 7.5, which is state of the art, and what basically is being used along the Wasatch Front as a standard of design of buildings and other structures and facilities.

Senator BRADLEY. I am sorry. I cannot understand you. If you could pull that microphone up to you.

Mr. McQUIVEY. The Bureau has made an analysis, as have their consultants, for an earthquake of 7.5 along the Wasatch Front. This kind of a standard for design of buildings and different facilities has been used with reasonable risk.

Senator BRADLEY. Well, but my question goes to the recent determination that a quake could be 7.7. Have you done anything to take a look at the question of a 7.7?

Mr. McQUIVEY. Not to my knowledge. I think 7.5 with some factor of safety is the standard used.

Senator BRADLEY. And you believe that in the absence of such analysis, you still comply with not only Bureau policy, but the law of the State of Utah?

Mr. McQUIVEY. The 7.5, as I said, has been the standard used along the entire Wasatch Front.

Senator BRADLEY. What about the so-called random earthquake centered directly underneath the dam in some sense is more damaging than in a lot of other respects? It is my understanding that seismic reflection data for the areas underneath the dam site and vicinity developed by private interests was made available to the Bureau, but you chose not to acquire or use it. Is that correct?

Mr. McQUIVEY. We have used under the dam an earthquake magnitude of 6.5 which has been projected as a reasonable assumption to make.

Senator BRADLEY. Reasonable. Why is it reasonable?

Mr. McQUIVEY. Well, in recognition of that is the maximum earthquake that they feel that can occur right in the vicinity of the dam.

Senator BRADLEY. And who is they?

Mr. McQUIVEY. This is our seismologist at the University of Utah and other consultants that we have used.

Senator BRADLEY. Given continuing controversy over Cottonwood and other faults, including buried faults up to a few miles beneath the dam and reservoir site, would it not be prudent for the Department to acquire and analyze the data to help prove or disprove the existence of such faults?

Mr. McQUIVEY. I would say that our consultant has been aware of that data, and I would suspect, without knowing for sure, that that has been evaluated in the process. We can go back and—

Senator BRADLEY. But do you know? Has it been evaluated?

Mr. McQUIVEY. No, not for a fact.

Senator BRADLEY. Do you not think it would be a good idea to know?

Mr. McQUIVEY. Yes.

Senator BRADLEY. How long will it take you to find out?

Mr. McQUIVEY. Oh, probably just checking with our consultants and design people to see if that has been taken into account.

Senator BRADLEY. So, by next week?

Mr. McQUIVEY. Next week, sure.

Senator BRADLEY. Okay.

The Provo River drainage has been particularly susceptible to landslides and rock slides in the past. Yet, I found no mention in the studies to determine the likelihood that old landslides could be reactivated or new landslides initiated in the reservoir area. Has the Bureau failed to conduct detailed slope and landslide hazard studies for the proposed reservoir?

Mr. McQUIVEY. I think that issue has been addressed in the environmental impact statement for the municipal and industrial system of local landslides and local problems.

Senator BRADLEY. Do you know?

Mr. McQUIVEY. Yes, it has been.

Senator BRADLEY. It has been.

Mr. McQUIVEY. It has been addressed in the environmental impact statement.

Senator BRADLEY. Is it possible that you could site where? Not right now, but if you could provide this.

Mr. McQUIVEY. We could provide that to you.

Senator BRADLEY. When could you do that?

Mr. McQUIVEY. Within a week.

Senator BRADLEY. Okay.

Has the Bureau calculated whether landslides into the reservoir will cause overtopping of the dam?

Mr. McQUIVEY. This likewise has been analyzed by the Bureau. We will provide that to you also.

Senator BRADLEY. Do you also have contingency plans if you are wrong?

Mr. McQUIVEY. We do have contingency plans. We will be having, for example, in the near future an emergency preparedness brief. It will be a public meeting which will, in effect, inform the public as to areas that might be inundated should there be a sudden break of Jordanelle Dam, and it will also give consideration to other hazards associated with that particular structure and de-

velopment. It will be held probably sometime in the month of December.

Mr. UNDERWOOD. Mr. Chairman, the development of those type of plans are commonplace for all facilities.

Senator BRADLEY. Finally, let me ask you about the question of the old mining shafts in the Park Premier Mining Company, the old mining dumps and the drainage areas downhill from the Elkhorn district, as well as the Mayflower and Ontario mine tunnels. These are going to be inundated by Jordanelle Reservoir and associated groundwater. My question is has the Bureau conducted or secured any substantial analysis of reservoir or Provo River pollution in terms of dissolved solids, sulfates, heavy metals that may result from these mine shafts.

Mr. McQUIVEY. We have a study that was made by a consultant, Unitex, that gives consideration to the mine drainage problem. What I am saying there is a published report that does cover that that was presented by a consultant.

Senator BRADLEY. So, how will the isolation of the northern arm of the proposed reservoir and the attendant accumulation of mine water and waste runoff affect water quality for that part of the reservoir?

Mr. McQUIVEY. For example, we have the Mayflower tailings. We have the Olson-Neihart tailings up there that could possibly impact on the reservoir. These, in effect, are being isolated from the reservoir. For example, the Olson-Neihart tailings—there is being a pit dug, lined with clay, lined with geotechnical material or cloth such that it isolates those tailings from ever being able to get into the reservoir.

Senator BRADLEY. It is the study by whom that tells you this?

Mr. McQUIVEY. Now, the mine drainage study and the effects of groundwater on the mines is by Unitex.

Senator BRADLEY. You understand the concern. You do not want to have the water being polluted by the mine shafts.

Mr. McQUIVEY. Right.

Senator BRADLEY. So, your assurance is on the basis of one study done by Unitex?

Mr. McQUIVEY. Well, then also we have worked with the other local entities there, the county, the State health department, the other Federal agencies. We have a Jordanelle technical action committee that has, in effect, come up with a plan to control the possible pollutants and effects from heavy metals and so on.

So, there is a plan that is in place. There is a monitoring system that is in place now collecting base data. There is monitoring proposed that will, in effect, monitor that into the future to determine if there are any impacts.

Senator BRADLEY. Do you have contingency plans in case you have a problem? See, what I do not want is I do not want this to be another Leadville. You do not either.

Mr. McQUIVEY. No.

Senator BRADLEY. But what I would like is some assurance backed up by some analysis that you can tell and share with the committee that this is not going to be another Leadville.

Mr. UNDERWOOD. Mr. Chairman, we will compile the material and provide it to you.

Senator BRADLEY. And when could you do that?

Mr. UNDERWOOD. We will try to make that same commitment, within a week, get that here.

Senator BRADLEY. It is important.

Mr. UNDERWOOD. I understand. I share your concerns. One of my specialties in my early part of my profession was in water quality. So, I am very sensitive to that.

Senator BRADLEY. Let me ask you. Have you done soil surveys in the irrigation service areas?

Mr. McQUIVEY. Yes, we have.

Senator BRADLEY. Are there any indications that drainage waters in any of the irrigation service areas could be contaminated with selenium or arsenic or boron or other materials?

Mr. McQUIVEY. From my knowledge, those studies show only minor amounts of selenium.

Senator BRADLEY. Well, how much? When you say minor, what is minor?

Mr. McQUIVEY. Not of significance, in other words, not to be of significant impact on the population or the fishery or resources.

Senator BRADLEY. Do you have any reports from Fish and Wildlife Service or the Geological Survey on these matters?

Mr. McQUIVEY. No. I think the only thing we have is what our land classification people have put together with respect to their analysis of the soils in the area.

Senator BRADLEY. But from your perspective the only problem—you have no other problem other than selenium.

Mr. McQUIVEY. That is correct.

Senator BRADLEY. And you can understand the concern here that you do not want to end up with another Kesterson.

Mr. UNDERWOOD. Again, if we had found something of significance, we would have consulted with our Fish and Wildlife Service and also the USGS.

Senator BRADLEY. So, now you are going to provide the committee with what things in a week? Just to recap, can you tell me what you are going to provide just so I make sure you have it?

Mr. McQUIVEY. The first one that I think that was mentioned was the earthquakes in the area, and we were going to provide the committee with that.

Senator BRADLEY. Backup material.

Mr. McQUIVEY. Backup material, right.

Senator BRADLEY. I do not want a heap or raw data.

Senator McCLURE. Earthshaking material.

Senator BRADLEY. I do not want a volume. I want to have assurance. If you do not have it, I want to know.

Mr. McQUIVEY. In addition to the earthquake information, there was to be information on slides in the area, local landslides that might be activated.

The other thing had to do with local slides in the reservoir basin that might be affected by the draw-down in the operation of the reservoir.

The other one had to do with the heavy metals, making sure that we had some type of a contingency plan there with respect to the heavy metals.

¹Senator BRADLEY. And the water.

Mr. McQUIVEY. And the water quality.

Senator BRADLEY. And then the last is——

Mr. McQUIVEY. The last had to do with the selenium.

Senator BRADLEY. All right.

Let me now kind of get back to the question of the Conservancy District doing the construction. Let me ask you this. If that happens, how will that affect the Bureau?

Mr. UNDERWOOD. You mean on this project or in a broader sense?

Senator BRADLEY. Your choice. I will follow up.

Mr. UNDERWOOD. I think in this particular case looking at the history, looking at the cooperation in more recent times, which maybe has not been as good between the Bureau and even the district, I think if the assurances are there, and they truly believe there are some cost savings—I am not completely convinced that is the case, but if they believe that they are there, and that there is proper oversight and the terms and conditions that we are talking about, then I think it may foster a better cooperative spirit, and I would definitely direct my people to do that. And I think that would lead to more timely completion of the project. And if that is the outcome, then I think that we have accomplished what we wanted to do for the American public.

Senator BRADLEY. Let me ask you. If that happens, do you need the present staff levels in the Salt Lake City office?

Mr. UNDERWOOD. I will ask my regional director.

Mr. ROBISON. Obviously, if the district proceeds to construct, then certain people that we have presently in our Provo, Utah office probably would not be necessary. We would be as interested in achieving cost savings as would anybody else, and we do not have to have people there who would not necessarily be required.

Senator BRADLEY. Would it make sense to consolidate in Denver since that is where the bulk of the big action is?

Mr. ROBISON. We have done a lot of consolidation in Denver already with respect to planning and other activities. Denver probably would not be the place for us to consolidate right now. Our position would be that in Salt Lake we still have many more concerns besides those that are related to the Central Utah Project.

Senator BRADLEY. But you agree your staff would be too large and that we could cut the Federal budget by cutting the staff rather dramatically because you would not have this big thing on your plate.

Mr. ROBISON. Well, my response to that would have to be somewhat guarded. We would have to make an analysis of what the situation is and make reductions accordingly.

Mr. UNDERWOOD. I think, Mr. Chairman, you have to recognize too that when we are setting budgets, there is priorities, and in some cases we could very easily redirect these people to other efforts.

Senator BRADLEY. Well, can you get me your suggestion as to what it would mean for the Salt Lake City office?

Mr. UNDERWOOD. Sure. In terms of an impact, manpower?

Senator BRADLEY. In a week? I am trying to move this thing and make a little progress here. There are certain questions that I need answers to.

Mr. UNDERWOOD. We can provide that.

Senator BRADLEY. Let me ask your opinion about the role of the Bureau in creating the situation that we find ourselves in today. This is on one level a real irony, and on another level, it is a real indictment that here we have one of the last, if not the last, large western water projects and the proposal is to cut the Bureau out of the project. Tell me. That has got to give you some pause. You have been there a long time.

Let Mr. Robinson ~~speak into~~ the microphone. He does not have to whisper it in your ear.

Mr. UNDERWOOD. He did give a good comment. I will relate what it was. He said we built the hard part.

[Laughter.]

Senator BRADLEY. Well, I have heard that before in a lot of ways.

Mr. UNDERWOOD. There is a lot of merit to his comment. There is parts of the project that are very sophisticated. There are parts that will not be as sophisticated that still need to be completed. The Bureau will still be heavily involved, and I think the district would want it that way. And when they testify, I think you are going to find out to that degree that they are still looking for the involvement of the Bureau and the expertise of the Bureau, especially when it relates to the tunneling activities, et cetera.

Senator BRADLEY. Will they oppose the terms and conditions recommendation that you made would you guess?

Mr. UNDERWOOD. From my overall statement?

Senator BRADLEY. Yes.

Mr. UNDERWOOD. Probably.

Senator BRADLEY. Well, then we have a conflict.

Mr. UNDERWOOD. Well, I do not think it is going to be in its entirety. If you look at the comments that are in the statement, there is a lot that are reflected in the bill that they were a party to. There is some that go outside of that.

Senator BRADLEY. Let me ask you maybe one more question. It relates to your numbers on the overall cost. You informed us about a week ago that some \$200 million worth of CRSP expenditures had not been reported in earlier calculations of the CRSP cost ceiling. And you may well be considerably over your cost ceiling. Now, is that right?

Mr. UNDERWOOD. I may be incorrect, but what I believe you are referring to there was a table provided that indicated in terms of the Bonneville—the table that had the original costs, indexed costs in 1990, and then appropriations through 1990. That one table—we have another table that was floating down that is in conflict. There was an omission in terms of 1989 appropriations of an amount of—

Senator BRADLEY. It is \$200 million.

Mr. UNDERWOOD. Yes, roughly at about the figure that I think that you are talking about.

Senator BRADLEY. Where did you find the \$200 million in there?

Mr. UNDERWOOD. What this was it was an omission that we did not put in the actual amounts that were appropriated in 1989. That was just a human error in that one table.

Senator BRADLEY. Well, does that mean you are spending money now without authorization?

Mr. UNDERWOOD. No, because that is still within the cost index. It is still below that. It still, I believe, comes up less than the cost ceiling. We are still within the cost ceiling.

Senator BRADLEY. You have the thing there. Can you do the numbers for me so that we can—

Mr. UNDERWOOD. Yes.

Senator BRADLEY. Provide it for the record.

Mr. UNDERWOOD. Yes, we will provide that correction of that table for the record.

Senator BRADLEY. But the question is is this over the cost ceiling that has been authorized?

Mr. UNDERWOOD. No, because the cost ceiling goes for the project. We are well within. And this is, like I indicated to your earlier, what we could complete within the cost ceiling and still has to be funded outside. And that is really the I&D and some of the completion of the Diamond Fork system.

Senator BRADLEY. Let me ask you about the IG's recommendations. Are you implementing them?

Mr. UNDERWOOD. If I can recall all of them, I think there were four of them. One happened to deal with a report to Congress looking at that table that we have made an error in, and that has been complied with.

Wait just a minute and I will take a look and see what those others are. I am trying to recall the other recommendations off-hand.

Senator BRADLEY. The basic question is are you over the cost ceiling?

Mr. UNDERWOOD. No. In that particular case, we are not. The cost ceiling is applied to the project as a whole. Congress has given its direction on numerous occasions regarding that, and we are not in excess of the cost ceiling.

Senator BRADLEY. Even if you used the IG's recommendations?

Mr. UNDERWOOD. They were talking about separate units, and like I indicated to you, the Congress has always indicated that it is to be treated not on a project-by-project basis.

Senator BRADLEY. So, you are saying it might be over in a section or a unit, but it is not over the—

Mr. UNDERWOOD. Well, there is no cost section per unit. There is only one cost ceiling.

Senator BRADLEY. All right.

Well, I think that you have raised some important questions here. We are going to hear, of course, from the Conservancy District, but I would like to get the questions answered.

Mr. UNDERWOOD. We will try to expedite it.

Senator BRADLEY. And also we have to resolve this liability question because to me it is not insignificant.

I thank you for your testimony.

Senator GARN. Mr. Chairman, could I make a couple of comments?

Senator BRADLEY. Yes.

Senator GARN. First of all, in looking at some of the disputes we have, I certainly hope the Bureau recognizes if there is no bill, there is no M&I repayment. If you want to talk about cost to the

taxpayers, let us not have a bill until we start repaying for that water. So, you have to understand that.

Secondly, let me for your benefit, Mr. Chairman, talk about safety. Certainly nobody wants to build a dam that is not safe, and certainly the Utah delegation and all the public officials involved, if you want to look at it politically, we are not going to stick our necks out. If you want to end a political career, have a dam break that you supported.

Over the years this question has been brought up over and over and over again, and virtually every time there has been another study. And so, I am not a geologist, and I cannot answer those questions professionally, but I have to rely on study after study. And the delegation in this bill is also writing a letter asking more than you have asked for today—all of us signing it—saying review all the data one more time. Look at all the different consultants and take a look at it again. So, we certainly share that concern, and we are not doing this lightly, and it has not been done lightly for years.

From a personal standpoint, I am not nearly as worried about Jordanelle as my own house. It sits right on top of the Wasatch fault literally; it is under my house. My family and I, if we are home, if that kind of an earthquake occurs, we will not be around long enough to be flooded. We will already be gone.

The dam is somewhat removed from all of the major faults. There are smaller ones around, but the major Wasatch fault, which all the geologists think is the one that, if we are going to have a big one, would occur there. It runs right down 13th East. We have studies on high schools and so on. This dam will be far safer than virtually buildings or structures we have in Salt Lake City or Salt Lake County. We have not built to the standards that the San Francisco Bay area has. We are starting to do that. I think we need to put this into perspective too. I doubt if there is any structure in the State of Utah that has ever been looked at as carefully as this. We did not used to have the standards, did not have the concern. So, we are certainly looking at that.

Certainly I understand the Bureau's position on looking at liability if they do not build it, but I think you also need to understand why we think the district ought to do it, and that is not that the district is always pure and does everything right. We have had some cost problems with them. And I think that over the years people would say that I have called it as I have seen it. And when the district have had some problems with excess travel costs and so on, we certainly have not had any compulsion about not talking about that, nor have I had any problem talking about the Bureau.

And you will find in the public record that there is no one more critical of their overhead costs. And first of all, the overhead costs were so high at 54 percent, I wanted to build dams. I wanted to build a water project, not support bureaucrats in Denver, Salt Lake or Provo. And so, I put an amendment limiting that on percentage-wise, and the Bureau ignored it. So, then on the appropriations side of my responsibility, I put dollar amounts, and they diverted \$80 million to other projects that we know about over the years that were appropriated for the Central Utah Project and benefited some other project. So, you will find the record shows that this Sen-

ator has been critical where it has been necessary whether it is the Central Utah Water District or the Bureau.

I will not take the time, but there are a lot of examples. The Bureau estimated they could build the Duchesne canal rehab for \$60 million. The Central Utah District built it for \$35 million. There are lots of examples.

Senator BRADLEY. Could I interrupt you? I just want to step out. I do not want Mr. Underwood to disappear. I have an emergency phone call. I will be right back.

Senator GARN. I will not let him disappear.

[Laughter.]

Senator GARN. Well, the point that I was trying to make is that I want to build a water project, and whoever's toes I have to step on to call it as I see it, I will do so. And that is a matter of public record of the Bureau's inefficiency. And despite the fact I have been critical of the district as well at times, I am absolutely convinced that those savings are real and that they will be there and the Central Utah Conservancy District can build at a lot of savings. And if the Bureau could somehow tell me how they could do it for that cost, that would be fine with me. I do not have any objections to your being concerned about liability. We can see if we can resolve that particular problem.

When you look at 30 to 40 years of working on this project and now you are getting to the end of it, I do not have time for turf disputes. I only want to see that the water is delivered. That is the only goal I have: deliver water and let us start repaying the Federal Government for that water.

And so, I will call it as I see for everybody, and I want that money in construction, not in overhead. And you were not there at the time, but there is no way anybody could justify 54-percent overhead for maintaining that design center of bureaucrats in Denver. It just has not made any sense. Now is the time for everybody to be blunt and candid and straightforward and finish this project.

Thank you, Mr. Chairman.

Senator BRADLEY. Thank you, Senator Garn.

Commissioner, I will ask you one last question and then you can go. We have a lot of people waiting.

I wanted to make sure you understand what I have asked you to do on costs, and that is whether you agree or disagree with the IG's recommendations, if they were implemented—if they were implemented—would you be over the authorized ceiling?

Mr. UNDERWOOD. If you were putting them on separable elements?

Senator BRADLEY. Yes.

Mr. UNDERWOOD. I would have to take a look at those figures.

Senator BRADLEY. Would you do that and get back to us in this time period?

Mr. UNDERWOOD. I think some of those may be on some of those tables that we provided already but in terms of what the indexed cost is and the amounts that are still to be completed or the expenditures.

Senator BRADLEY. Well, we would like to have them, and so we expect you to get back to us. But what is your guess now?

Mr. UNDERWOOD. How soon?

Senator BRADLEY. No, no. What is your guess? Would you be over the limit?

Mr. UNDERWOOD. I cannot say without really taking a look. I would have to take a look at it. I know we are well within the ceiling. I am more concerned with what the Congress' intent was and trying to stay within the ceiling and their directions.

Senator BRADLEY. Okay.

Mr. UNDERWOOD. Mr. Chairman, I would like to make one comment, and I think probably some of this came from the prompting of the Senator, Senator Garn, in terms of our project administrative expenses which are non-contract costs. And we would like to mention—and this is really for the record because I think I would like it known that in the particular case that the Bureau in more recent years—and I cannot go back and look at the history, but in more recent years, 1990, looking at the percentages we are talking about project administrative expenses in the neighborhood of 16 percent, of the total appropriations for 1991, projecting in the neighborhood of 13 percent. We have an initiative within the Bureau that I have been pushing very hard, and that is controlling total costs of doing business.

Senator GARN. Do you think that would have occurred without my amendments in two different legislative years?

Mr. UNDERWOOD. I think it probably had an incentive to—but you have to remember that there is professionals within the Bureau, and these people do try to do a good job. But there is always room for improvement. And like I said, I think we are making some real inroads in that area, and I just wanted that acknowledged for the record.

Senator BRADLEY. Thank you very much, Commissioner, for your testimony and for your associates. I do not have the names of your associates.

Mr. UNDERWOOD. This is Roland Robison, and this is Lee McQuivey.

Senator BRADLEY. Thank you very much.

Mr. UNDERWOOD. This is the Assistant Projects Manager for the Central Utah Project, and Roland is the Regional Director.

Senator BRADLEY. I know their responsibilities, but I needed them in the record.

Our next panel will be Jeff Appel of Haley & Stolebarger of Salt Lake City, Utah, and Ed Osann, Director of Water Resources Program, National Wildlife Federation. Let me welcome you to the subcommittee.

We have a lot of people to get through, people who have come from a long way, and I would like to be able to spend sufficient time and give everybody a chance to testify. I would like for you, if you can, to summarize your remarks, and if I cut you off because your summary has not been as succinct as I would like, it is no offense personally, it is that there are so many people who are in line.

So, welcome to the subcommittee, and let us begin with Mr. Appel and then follow with Mr. Osann.

STATEMENT OF JEFFREY W. APPEL, ESQ., HALEY &
STOLEBARGER, SALT LAKE CITY, UT

Mr. APPEL. Thank you, Mr. Chairman, Senator Garn.

My name is Jeffrey Appel, and I am speaking today on behalf of a coalition of Utah conservationists, sportsmen and environmentalists consisting of approximately 70 groups and over 41,000 members. While a number of our members have in the past been quite vocal critics of the project for over 20 years, over the past 2 years or so the reauthorization of the CUP has been a major and concerted focus of the entire group.

In 1989 we published a lengthy and detailed critique of the CUP as it had been conceived in the past and as it was viewed at the time. We rather fondly refer to that document as the Green Book, and I understand many here today have had the opportunity to undertake its review. Since the publication of that document, we have engaged in an extensive and difficult set of negotiations in concert with my colleagues from the National Wildlife Federation to improve the proposed CUP legislation from fiscal and practical, as well as fish and wildlife perspectives.

Today I am pleased to appear before the subcommittee to register the coalition's firm support for this bill and nearly 100 percent of its provisions. The bill will go a long way toward rectifying the destructive aspects of the project that have occurred in the past and will continue to occur during the remaining construction efforts.

There is one problem, however. This whole exception to our support at this time is the current failure to include the south shore of Provo Bay or Utah Lake as part of the State-managed wildlife refuge at Utah Lake. During the course of our negotiations, we were always of the opinion that the entire Provo Bay would be included as an integral part of that refuge. We are now told it will not be included. We believe this is a horrible mistake.

There is no question that Provo Bay is the biological heart of the Utah Lake ecological system for both waterfowl and fish species. It is a component of the central flyway for migrating species of birds. Our biological experts inform us it is the most environmentally sensitive portion of the entire lake and not only provides a home to the June Sucker, a species listed as threatened under the provisions of the Endangered Species Act, but also produces 90 percent of the emerging and submerging aquatics for that particular body of water. Finally, it is the keystone to the water quality of Utah Lake, a lake of notoriously poor water quality.

The failure to include Provo Bay would constitute an error of the gravest environmental magnitude and we ask that it be included in this bill prior to passage. While our original understanding was that all of Provo Bay would be incorporated within the wildlife refuge, in keeping with our tradition of compromise, we are willing to accept the inclusion of only the south shore of the bay leaving the remainder free for possible development as I understand that it is local development that is the basis for noninclusion of this particular portion of the bay.

Mr. Chairman, we appreciate your concerns that you raised concerning the Jordanelle Dam. We share those with you and have in the past and thank you for articulating them for us today.

We believe that this bill truly represents a new and more rational basis for water development in the western United States. It is a bill we not only can live with, but from which the environment of the State of Utah will profit greatly at what we believe will be a lessened expense to the Federal Treasury.

That concludes my comments. I would be happy to answer any questions you may have.

Senator BRADLEY. Thank you very much, Mr. Appel.

Mr. Osann.

**STATEMENT OF EDWARD R. OSANN, DIRECTOR, WATER
RESOURCES PROGRAM, NATIONAL WILDLIFE FEDERATION**

Mr. OSANN. Thank you, Mr. Chairman.

For the record, my name is Edward Osann. I am the Director of the Water Resources Program for the National Wildlife Federation.

We have a longstanding interest, Mr. Chairman, in Federal water resources development in general and the Bureau of Reclamation program in particular. Over the past 10 or 12 years, the Federation's membership has probably enacted something like 50 or 60 resolutions dealing with some aspect of water resources policy or projects.

I do not think the National Wildlife Federation takes a back seat to anybody, OMB or anybody else, in terms of our skeptical approach to Federal water resources development and our critical review of Federal water projects. But I have to say that I think the administration's approach to dealing with the Central Utah Project has been irresponsible, and I think it has been ineptly carried out. We had legislation presented in the last Congress. It was very clear that these issues were going to need to be addressed certainly since February when the delegation reintroduced legislation which was itself the product of considerable discussions. It was clear that there were additional issues that needed to be addressed.

Now, in February we testified in opposition to the delegation's bill. It had some very commendable features, but it had some serious shortcomings. The administration withheld its support. We did indicate to the delegation our willingness to engage the issues and try to reach some resolution on that. And by about the latter part of April, we had the framework of an agreement with the delegation, and the administration was nowhere to be seen.

Now, to come in and this point and testify in opposition to Senator Garn's bill we believe is not helpful and is a remarkable sense of detachment for an agency with regard to the second largest construction that it has under way.

But we are here to testify in support of S. 2969, Mr. Chairman. During the last 6 months, the delegation, notably Senator Garn and Congressman Owens, have been very actively involved in trying to seek a resolution of the issues that were outstanding. The conservation community from Utah and in Washington has responded and the result has been a very substantially modified bill that we strongly support.

Going into the discussions, the bill from February contained an ambitious fish and wildlife mitigation program that was equal in cost but far greater in benefit to the fish and wildlife proposals that the Bureau had previously supported. It represents a complete reformulation of the resources, the dollar resources, that the Bureau was prepared to commit under the old project. I would point out that notwithstanding the Bureau's criticisms of fish and wildlife components of the bill today, the fish and wildlife program that the Bureau was prepared to go forward with under the old project had some very costly and wildly impractical components to it, including two pumping stations to recirculate water like you would in a fish tank in the high mountain streams of the Uinta Basin, impractical and untested and without support.

So, the fish and wildlife measures that are identified in the bill and scheduled in the bill represent the input from fish and wildlife professionals in Utah as a way of reallocating the comparable amount of dollar resources to do things that really need to be done and would have substantial benefits for fish and wildlife and recreation associated with this project.

Senator McClure was absolutely correct in his analysis about the testimony that you have heard seeking cost sharing now for enhancement measures. This would be a major policy change. The 1956 act allows for these measures to go forward on a nonreimbursable basis. Now, we are not afraid of this issue. In fact, we were considering whether this is a policy that ought to be reconsidered at this time ourselves, but we were considering that a year ago, a year and a half ago, and we looked around and found no real constituency for that. And now, as Senator McClure points out, the bill that is in front of the committee is a product of months and months of difficult negotiations and Tradeoffs, and it is a balanced package. And the recommendation that the administration has made is frankly unhelpful.

We would like to point out just a few of the highlights in the bill as it now stands before the committee. The administration has laid out a set of principles. I will have to say that probably two-thirds of the principles that the administration has presented this morning are either in the bill already or could easily be accommodated, and I would say that some of the key ones that are in the bill are there as a result of some tough negotiations that we had that the administration was not involved in.

But there is a meaningful cost sharing requirement. It is 35 percent up front concurrent with construction, 50 percent for the cost of new studies. And I think that the cost sharing requirements that are contained in the bill with regard to irrigation now are the tightest in the reclamation program would they be enacted.

There are reduced dollar savings on the Federal expenditures for irrigation in this bill. There are business like conditions on the initiation of construction for the irrigation features. We are not going to have a white elephant rusting away up in the mountains half built as a result of the Bureau or the district starting a project that cannot be finished. The district has to secure binding commitments for 90 percent of irrigation water prior to the initiation of construction. They have to complete all of the planning and evaluation and

environmental compliance on the entire system before the initiation of construction.

There is a termination of construction authorization for those project elements that are not under way within 5 years. To the extent that there is an obligation to the people in Utah from the Federal Government, this bill represents an opportunity to execute that promise and it is either going to be executed or it extinguished within 5 years.

There is an affirmation of the findings of the Inspector General regarding the cost accounting and financial management of the Colorado River Storage Project. And there is a comprehensive, sweeping water conservation program that will require all Utah agencies receiving water from the project to implement cost effective opportunities for water saving over the next 2 decades.

Finally, the bill does extend the life of the Mitigation and Conservation Commission for 20 years beyond the completion of construction, together with substantial sources of funding.

Senator BRADLEY. Can you wrap up, Mr. Osann?

Mr. OSANN. Yes.

In conclusion, Mr. Chairman, this bill represents an opportunity, not a guarantee. We have reservations and doubts about the viability and practicality of further irrigation development, but in discussion with the Utah delegation and with regard to the balance of provisions in this bill, we have been willing to set aside those doubts and allow the delegation and the district the opportunity to go forward with a program that carefully controls the Federal Government's financial exposure while protecting the environment.

[The prepared statement of Mr. Osann follows:]

PREPARED STATEMENT OF EDWARD R. OSANN, DIRECTOR, WATER RESOURCES PROGRAM,
NATIONAL WILDLIFE FEDERATION

My name is Edward Osann, and I am the Director of the Water Resources Program of the National Wildlife Federation. The Federation is the nation's largest conservation organization, totalling 5.8 million members and supporters. Together with our Utah affiliate, the Utah Wildlife Federation, we have a longstanding interest in the Bureau of Reclamation program generally, and the Central Utah Project (C.U.P.) in particular.

Mr. Chairman, I am pleased to register the strong support of the National Wildlife Federation for the enactment of S. 2969. Much progress has been made in dealing with a wide range of difficult issues since the last hearing of this subcommittee on legislation for this project in the 100th Congress. During the past six months, the Utah Congressional delegation has been constructively engaged in discussions to resolve the issues associated with the completion of the C.U.P. The environmental community in Utah and in Washington, DC has responded in kind, and the result is a substantially modified bill that we strongly support.

In February, 1990, the delegation reintroduced legislation to complete the C.U.P. (H.R. 3960/S. 2182). Itself the product of lengthy discussions, this bill had many desirable features. Notable among them were:

- an ambitious fish and wildlife mitigation program, equal in cost but greater in benefit than the mitigation plans of the Bureau to date;
- clear requirements for the protection of instream flows in rivers affected by project operations; and
- the creation of a commission to oversee the implementation of fish and wildlife measures.

Notwithstanding these desirable components, serious problems with the bill remained for further discussions to resolve.

S. 2969, and its House companion, H.R. 3960 as reported by the House Interior Committee, responded to the shortcomings of the February bill. Major improvements include the following:

- meaningful non-Federal contributions to the costs of completing the project, including 35% for the construction of the Irrigation and Drainage System, Uinta Basin projects, and remaining Diamond Fork System, and 50% of the cost of new studies;

- reduced dollar ceilings for Federal expenditures on irrigation;

- businesslike conditions on the initiation of construction of irrigation features, including the execution of binding contracts for the delivery of 90% of the water, and completion of all planning requirements and environmental compliance;

- the termination of construction authorization of project elements not underway within five years;

- the affirmation of the recommendations of the Inspector General regarding cost accounting and financial management of the Colorado River Storage Project;

- a comprehensive water conservation program, requiring all Utah water agencies receiving water from the project to implement cost-effective opportunities for saving water over the next two decades;

- a state-managed wildlife preserve at Utah Lake; and

- extension of the life of the Mitigation and Conservation Commission for twenty years beyond the completion of construction, together with substantial sources of funding.

I would like to mention one area where we believe that S. 2969 can and should be strengthened. The Utah Reclamation Mitigation and Conservation Account, authorized in Title III, is intended to mitigate damages resulting not only from the Bonneville Unit, but from all CRSP features in Utah, where there has been a substantial shortfall in fish and wildlife restoration efforts to date. We are deeply concerned that the fund as presently proposed may be entirely drawn from the Federal Treasury, rather than being sustained by the balanced contributions of water users, power users, and the State of Utah, as well as the Federal government. The lack of real cost-sharing for this fund will put it in a poor position to compete for limited Federal dollars in future years of tight budgets. We also believe that the funding of environmental measures by the projects' water and power beneficiaries makes for sound natural resource policy, as well as prudent fiscal policy.

Mr. Chairman, the broad sweep of S. 2969, and the innovations it contains for dealing with construction management, water conservation, and fish and wildlife restoration, assure that this bill will be considered a landmark in the evolution of Western water development. We look forward to working with this committee and the Utah delegation to secure enactment of the bill this year.

Thank you for the opportunity to present these views, and I would be pleased to respond to any questions from the subcommittee.

Senator BRADLEY. Thank you very much.

Senator GARN.

Senator GARN. Thank you, Mr. Chairman.

Gentlemen, thank you for your testimony.

I would only add in a general sense to what you have said. In the 23 years I have been in public office, I have been in no negotiations on any subject that have taken so long or have been as difficult, and I think it is fair to say that 2 years ago we were this far apart. And I think that the fact that both sides have been willing to give—Ed has expressed his opposition or reservations about an I&D system. Well, I had a lot of reservations about some of the environmental things that I thought were excessive. The point is both sides gave. I think that is in the true spirit of negotiation. Again, if Jeff and Ed could write the bill, it would be quite different. If I could write it, it would be quite different. But we have been able to come together.

And that is why at this point, after all the difficult, tortuous negotiations and the give and take to come up with a balanced bill—and I truly believe that it is a well balanced bill, and I do think it sets some precedents for other water projects of good public policy—that when we start picking at it now—anybody—the whole thing could blow up because it is so carefully balanced, each one of these things. I had to give something to extend the 20 years. I did

not want that commission to extend 1 day beyond the end of the construction, but my side of the argument got some things in return. So, everybody operated in good faith and put an enormous amount of time in it.

That is why I would say to you, Mr. Appel, that probably nobody likes my compromise language on the bird refuge, but on the one side, you would like to include all of Provo Bay. On the other side, Mayor Jenkins, virtually all of the Utah Lake Land Users Association, Utah Farm Bureau, et cetera, et cetera, are totally opposed to including the bay. They do not, as I say, like my compromise language; you do not either. But it seems to me if we tilt either way, if we expand even the south, then you get into issues of the south bay of the approaches to the airport. It is not just a golf course. It is agriculture. It is the use of the Provo airport, which is a large airport in terms of the runways, and I expect you will see much growth of that as Salt Lake International gets busier and so on. So, there are some problems with that. And I do not see that we can go either way without causing extreme difficulties for the bill.

So, while I appreciate your support very much, I wanted to point out that that was another area of give and take and compromise because I started from the position that I would rather rehabilitate the northern bird refuges and so on that were so devastated by the floods rather than even getting into the controversial issue of Utah Lake. And that is why I proposed the compromise language that I did trying to seek a middle ground between those who did not want any bird refuge at all on Utah Lake and those of you who wanted to extend it into Provo Bay. So, I think from the standpoint of the balance of the bill, that would be virtually impossible to change because if we go the direction of some, they want no bird refuge, you want more, and I would hope that that is something that you would recognize that with all these tradeoffs, everything is balanced. It is like the teeter-totter. We have it out there and you pull one side of it off, it is going to tip. And I understand your concerns about Provo Bay, but I also certainly understand the concerns of the mayor and the Utah Farm Bureau and all of the other interests, the airport users and so on. And it is too bad they are in conflict, but they are.

Thank you, Mr. Chairman.

Senator BRADLEY. Thank you very much, Senator Garn.

Let me thank both of you for your testimony. I think it has been very helpful.

Our next panel consists of Dee Hansen, Director, Department of Natural Resources, State of Utah; Roscoe Garrett, Central Utah Water Conservancy District; Leo Brady, Central Utah Water Conservancy District Board; Nick Sefakis, Metropolitan Water District, Salt Lake City; Gerald Maloney, Salt Lake County Water Conservancy District; Tom V. Hatch, Chairman, Garfield County Commission.

Well, this is a very impressive array of knowledgeable talent here. And we have a shortening time period. So, I would hope that we could look to Mr. Hansen to be the spokesman, and I am sure that many of you are going to say the same things as Mr. Hansen. Do not bother to repeat what he says, but if you have a few sentences that you would like to comment, please do and then we will

have a few questions. But it is very important that you—your full statements will be in the record, so you need not worry about that. And if I have to begin to be a little aggressive with the gavel, it is only because we want to try to have the hearing completed. And if we do not complete the hearing, then we have to have another hearing. And I would just as soon get this completed today.

Senator GARN. Mr. Chairman, if I could just make one comment before they start. I am expecting a phone call, and so if I have to leave for 5 or 10 minutes, I will be back. I just did not want them or any other witnesses to think I am just walking out on them. I will return if that call comes through.

Senator BRADLEY. Mr. Hansen.

We are also joined by Don Christiansen, General Manager of the Central Utah Water Conservancy District.

STATEMENT OF DEE C. HANSEN, DIRECTOR, DEPARTMENT OF NATURAL RESOURCES, STATE OF UTAH, ON BEHALF OF GOVERNOR NORMAN H. BANGERTER

Mr. HANSEN. Thank you, Chairman Bradley and Senator Garn, members of the committee.

My name is Dee C. Hansen. I am the Executive Director of the Utah Department of Natural Resources and am here representing Governor Bangerter, who would be here were he not in the Far East at this time. I will attempt to be very brief, Mr. Chairman, so that we can move quickly.

I would like to make one statement not in any way contradictory to what Senator Garn has said about the Bureau of Reclamation, but to let you know that during the past 4 years where we have been in an extensive drought, as you are well aware, the Bureau projects have been an absolute lifesaver to the State of Utah. I am not getting into the overhead costs or any of that because I support what Senator Garn is saying in that regard and believe that those overhead costs could be reduced significantly. But the projects are valuable to us.

I will not go into the background of where the water comes from. You know that already, and I do not have to say that.

Last week we sent to you, Mr. Chairman and members of the committee, a copy of the Utah State water plan, and I hope you received that. And the reason for sending that is to let you be aware that we think we have been leaders in the State of Utah in working toward sound, economic, viable water projects that would serve the purposes of the residents of the State of Utah.

This particular bill that is before us has been a cooperative effort. We have worked closely with the Bureau of Reclamation—Central Utah Conservancy District and others in the State of Utah—in developing and coming to this bill. And we think it is a good bill and support it completely.

The inflationary problems, as you are well aware, go way back and have plagued this project for many years, have run the costs significantly than any of us ever anticipated. It is too bad it could not have been completed 15 or 20 years ago, and we would have saved a great deal of money. As you know, that caused the repayment contract to have to go back to the voters, and you are prob-

ably also aware that 73 percent of those voters approved the extension of that repayment contract.

It does represent compromises between the environmental community and water development, and some of those have been painful. And I represent both agencies. I represent the Division of Wildlife Resources since they are under the department and also the water development side, and so I certainly keenly feel that tug as I try to balance within our own State those issues. But I think, as Senator Garn has said, each has made significant compromises to see that this could come about.

In the area of the Ute Indian water settlement, that has been an ongoing process. We have been involved for 12 years. Senator Matheson initially initiated a plan to settle by negotiation the Ute Indian water issues, and we worked on that diligently. I was appointed back 12 years ago to be chairman of that negotiating committee for the State. I believe that I was the middle person or the compromiser because I was representing the Indians and the non-Indians in trying to find a solution that would be appropriate so the Indians could go ahead and develop and so that the non-Indians would not be devastated by that development.

I compliment the Indians, Lou Duncan as Chairman and the members of the business committee and their attorneys. There have been several attorneys over the years that we have dealt with. Fortunately, their engineer has remained the same, and that has been very helpful to us.

We have resolved most of the issues. We are down to where one or two small issues are not yet resolved. I believe that they can be resolved very quickly. We get to standoff positions where neither wants to give I suspect, but I think we are very close to doing that.

An instream flow agreement has been recently—in fact, last week—signed as an amended instream flow agreement, a significant contribution there by the district in moving from 6,500 acre-feet to 44,400 acre-feet of project water that is devoted to instream flow uses within the Uinta Basin.

I would like to commend all of the parties responsible for developing section 107 in this bill. Within Utah, the Board of Water Resources in 1982 adopted a similar policy that I think is excellent for an arid State such as ours. We have gone out to the public in a water education process. We are working with the public schools in kindergarten through sixth grade. We have trained school teachers, and we are reaching out so that kids know that you just do not turn on a tap and it is magic that the water appears. We are trying to let them know where that water comes from and it needs to be conserved, and they will work toward doing that. We find that those young kids are much better than the older people to do that. They go home and remind mom and dad, do not leave the water running when you brush your teeth. We need to conserve.

I think in the State of Utah, in closing, we try to balance the interests of all water users, and I know that takes tradeoffs. We think we have done that. We think this bill represents that. We tried to meet the growing needs of the residents of the State of Utah.

And there have been some comments about the I&D system. We believe that that is an important part of the State water plan. We

know that we have not been successful, nor has anyone in the country been successful, in moving the population to the areas where the water is, but we know with the I&D system, that if the water is there, there may be opportunity for economic development and moving of that population further south to those counties that so vitally need income.

As I indicated, there is some fine tuning. I have attached as part of my testimony, and will not go through that, Mr. Chairman, some areas that we have concern with that we would like your counsel to review. We would be happy to be available to visit with them and work that out if you desire.

I appreciate the opportunity to appear before the committee.

I would like to compliment Utah's delegation. They and their staff have spent literally hundreds, maybe thousands, of hours in negotiating the bill that is before you. I commend them for that. It has been an untiring effort on their part, and it has not all been smooth, as you know.

I would also like to compliment the environmental interests, Ed Osann and David Conrad, for their tireless efforts on this bill. They have spent equally numerous hours in support of that, and I commend them for that.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Hansen follows:]

PREPARED STATEMENT OF DEE C. HANSEN, DIRECTOR, DEPARTMENT OF NATURAL RESOURCES, STATE OF UTAH, ON BEHALF OF GOVERNOR NORMAN H. BANGERTER

Chairman Bradley and members of the subcommittee, my name is Dee C. Hansen, Director of the Department of Natural Resources, and I'm representing Governor Bangerter of the State of Utah, who's in Europe and the Far East at the present time. Thank you for the opportunity of testifying on the important issue of amendments to the Colorado River Storage Project Act, Titles I through IV, it is our hope that this will be a "Utah only" bill, and provisions therein will not adversely affect our fellow Colorado River basin states nor the power users who are recipients of Colorado River Storage Project power.

For the record, let me provide a little background. The basic concept of the Central Utah Project is to move water from the sparsely-populated, but relatively water-rich, Uinta Basin to the areas of critical need in the Bonneville Basin. This idea was initially voiced in the early 1900s but took more than 60 years to develop into a workable, authorized plan.

The Central Utah Project is one of the critical components of the recently released Utah State Water Plan. I have sent copies of this document to members of this committee to demonstrate that Utah is still a leader in responsible water planning. Completion of the features associated with the CUP will develop much of Utah's remaining share of Upper Colorado River water.

The state has worked closely with the Bureau of Reclamation and the Central Utah Water Conservancy District in totally integrating the Central Utah Project into water development plans for the entire state. The Irrigation and Drainage system, in particular, is focused on improving the economy of one of Utah's most productive agricultural areas, with the goal of increasing opportunities for those who wish to work and live in rural Utah.

Although the initial Definite Plan Report described a project that appeared logical and feasible in 1964, events occurring over the past 25 years have made major modification both necessary and desirable.

COSTS

The total cost of the Central Utah Project was estimated in 1964 at \$325 million. Approximately \$1 billion has been spent to date, and it is projected that when construction is essentially completed in 1995, nearly \$2 billion will have been spent. This cost increase has already caused the project sponsor, the Central Utah Water Conservancy District, to go back to the voters for authorization to increase the re-

payment contract. In a special election held in November 1985, residents of the district approved this increase by an overwhelming majority of 73 percent.

A related and equally critical problem resulting from the escalating costs is the effect on the authorization limit for the Colorado River Storage Project Act. The Central Utah Project is the largest participating project under construction, and the projected costs to complete the CUP caused the total cost of CRSP projects to exceed the current authorized limit. The necessity to adjust that limit is the driving force for amendment of the CRSP Act.

ENVIRONMENTAL ISSUES

As you well know, amendment of an act provides an opportunity for various interest groups to incorporate changes which appear desirable to them. In this case, parties concerned about the environmental impacts of the CUP (and also CRSP power customers) were among those negotiating with the Central Utah Water Conservancy District. The legislation before you represents a compromise on numerous provisions related to recreation, wildlife, and the environment.

This bill will reduce by roughly \$121 million Reclamation's original request for \$754 million to finish the CUP. Nearly 20 percent of the funds will be allocated to nonreimbursable fish and wildlife mitigation and enhancement funds under Section 8. I want to commend the entire Utah congressional delegation for their efforts at working on this approach. Although there remain several issues of concern, it is important to point out that we are united in our efforts to resolve these issues.

UTE INDIAN WATER SETTLEMENT

It is hoped that a settlement of the Ute Indian water right claims could be included as part of the legislation presently being considered. Currently the Ute Tribe, state of Utah, and Central Utah Water Conservancy District are actively negotiating a final agreement concerning the water right claims of the Tribe. During the past year, they have met formally on eight occasions to discuss various components of a possible settlement. In my opinion, they have made tremendous progress, and although there remains a number of issues to be resolved, I do not believe they are insurmountable.

KEY FEATURES

From the perspective of the state of Utah, the key feature of this bill is to increase the funding limit under the CRSP Act sufficiently to permit completion of the Central Utah Project as presently envisioned. This must include the Irrigation and Drainage System of the Bonneville Unit which is essential for supplemental irrigation needs in central Utah. People in this area have been faithful in their support of the CUP and have continued to pay taxes for the CUP for over 20 years. Equity demands that commitments to these people be kept.

Equally important is the fact that under present law, if the imported water is directed towards agricultural purposes as originally intended, power revenues cannot be used to repay already expended collection system costs. These costs would have to be forgiven by the federal government.

Another critical feature of this bill is the commitment to maintain a full 44,400 acre-feet of minimum streamflow in the streams supplying water to the Strawberry collector system. This commitment completes a process, initiated by Governor Scott Matheson, which has increased minimum instream flows from 6,500 acre-feet to 44,400 acre-feet with the promise that increased project yield may offer up to 5,000 acre-feet of additional water for these purposes.

WATER CONSERVATION

Regarding water conservation (which most of us in the West define as "wise use" rather than "less use"), I would like to commend the parties responsible for developing the concept underlying Section 107 (Water Management Improvement). The Board of Water Resources in 1982 adopted a similar policy, and I think it is an excellent one for an arid state such as ours. Since I last appeared before you, we have established a water conservation/education section within our Division of Water Resources. Activities in the past year and a half include:

1. Distribution of water education materials to the public schools,
2. Workshops for the teachers (to date 70 percent of the schools have been reached),
3. Development of water conservation pamphlets and brochures for distribution to the general public,

4. Initiation of an effort to revise the state plumbing code to encourage the use of low water-use fixtures, and
5. Organization and sponsorship of water conservation workshops for the public.

CLOSING STATEMENT

In the State of Utah we try to balance the interests of all water users in the state. This is not always an easy task and tradeoffs must always be made. This bill, I believe, provides for adequate wildlife mitigation and recreational opportunities, and also will meet the water resource needs of much of our growing population. There are those who would say that the cost for the I&D system is too high, while others would say that the cost of mitigating wildlife and recreational concerns are not reasonable. In reviewing the bill and preparing these comments, I have attempted to objectively consider the needs and desires of all interest groups.

Naturally, some fine tuning of S. 2969 is required. As an attachment to my testimony, I am making some specific recommendations that, though technical will be very important in the efficient implementation of this legislation and the state of Utah's support of this bill. With these changes, I feel we can meet our water resource needs under the Central Utah Project and appropriately address the environmental concerns as well.

I appreciate the opportunity to appear before this committee, and I hope the Central Utah Project can move forward without further delays. I would also like to take this opportunity to thank Utah's Congressional delegation for the many hours spent by them and their staff.

As you know I wear several hats, one of those is the Division of Wildlife Resources. In this regard, I would like to thank Ed Osann and David Conrad for their tireless efforts on this bill.

[Attachment.]

SPECIFIC RECOMMENDATIONS

Cost-sharing for development of conjunctive use projects: Section 102(a)(2), which authorizes both a feasibility study and implementation for conjunctive use, creates an ambiguity in the level of cost-sharing. In order to be consistent with the rest of the bill (which states 50% non-federal cost-sharing for planning and 35% for implementation), we recommend that the first sentence in Section 104 be modified to read:

"... features authorized by Section 102, including development under Section 102(a)(2), shall be 35% . . ."

Operating Agreements: The state of Utah strongly supports efforts to develop operating agreements on those reservoirs and streams affected by the Central Utah Project. In developing the operating criteria for the project, we believe we have, (1) protected existing water rights from adverse impact and, (2) minimized future conflicts. Section 109 of the bill proposes that Reclamation develop these operating agreements in consultation with the Utah Division of Water Rights and the district. It is our suggestion that this section be modified to read, "Utah Department of Natural Resources, in cooperation with Reclamation and the District, shall apply its best efforts to achieve operating agreements for the Jordanelle Reservoir, Deer Creek Reservoir, Utah Lake, Strawberry Reservoir, and the streams which supply the Strawberry collection system by January 1, 1996." We believe the state has the responsibility and is in the best position to take the lead on this issue.

Restrictions on use of funds for local development: Section 106(b)(2)(B)(iii) prohibits use of federal funds for local development for reservoirs of capacity greater than 5000 acre-feet. We feel there is no rational basis for such a restriction, and that this paragraph should be eliminated. (There are enough significant checkpoints and roadblocks to reservoir construction already in effect to eliminate all but those projects which are acceptable to all parties.)

Purpose of water management improvement: Section 107(a)(6) ties efficient use of Bonneville Unit water to importation of water into Salt Lake County from the Bear River. From any standpoint, efficient use of Bonneville Unit water should be maximized; whether or not Bear River water is imported into Salt Lake County and should depend on both the efficiency of project, and the needs as determined by local and state government officials. We recommend the paragraph be modified to read:

"(6) maximize the efficient use of Bonneville Unit water."

Exclusion of conservation measures: Sections 107(b)(1)(B)(i) and 107(f)(3) exclude certain conservation measures from crediting to the conservation goals required by

Section 107(b)(1)(A). These measures are reduction of leakage, elimination of declining block rate pricing, metering, and improved standards for plumbing fixtures; all these have been proven effective in other states. We feel that exclusion of these measures from consideration in the CUP area will divert attention towards less-proven methods, and will make it very difficult for the Division of Water Resources to effectuate a state-wide policy of the more effective measures.

We do not understand the reasoning behind the exclusion, and recommend that the phrase "... exclusive of any measures promulgated pursuant to subsection (f)(2)(a) through (D)..." be removed from subsection 107(b)(1)(B)(i) and that subsection 107(f)(3) be removed in its entirety.

Creation of Utah Water Conservation Advisory Board: We have no objection to the federal government insisting on state action regarding water conservation as a condition of funding of the Bonneville Unit Irrigation and Drainage System, but we strongly believe the state should be free to choose the most effective mechanism for achieving this end, as well as what conservation measures will be most effective in the specific areas involved. We recommend elimination of Section 107(f)(1), and modify Section 107(f)(2) to read:

"The State shall develop and recommend water conservation standards and regulations for promulgation by State or local authorities in the service area of each petitioner of project water, such as:"

Commission Membership: The state supports the establishment of the Utah Reclamation Mitigation and Conservation Commission. Section 201 provides for five appointed members. Three of the members, excluding the state representative, are to be individuals who have training and experience in fish and wildlife or environmental conservation matters. We support this kind of expertise on the commission. In the case of representation from the State of Utah, however, it would be much more appropriate to be able to select from the entire Department of Natural Resources. In addition to the Division of Wildlife Resources, three other divisions (Water Resources, Water Rights and Parks and Recreation) within this department have responsibilities outlined in the bill. Thus, from the state's perspective, it is essential to have the department represented on the commission so that activities and responsibilities are properly coordinated among the four divisions.

Instream Flows: Available water supplies are limited in Utah, and it is imperative that this water be used wisely in order to most efficiently meet, our growing needs. In examining this legislation, there are two items of concern to me. First, Section 203(c)(4) states that there will be a minimum of 75 cubic feet per second in the Provo River from Olmstead Diversion to Utah Lake to provide for a fishery in this reach of the river. The waters of the Provo River are very high quality and suitable for drinking water purposes with minimal treatment. However, once the water reaches Utah Lake, its quality is substantially reduced and would require costly treatment for culinary use. Therefore, we would request that the 75 cfs minimum flow requirement be reassessed to determine whether such benefits gained are commensurate with the alternative uses foregone.

Quid pro quo: The underlying compromise in this legislation was that the federal government would provide funding for completion of the Bonneville Unit Irrigation and Drainage System in return for actions taken by the state and the district to protect and enhance the environment. The actions include preparation and implementation of conservation plans [Section 107(b)], establishment of a water conservation board [Section 107(f)] and a reclamation and conservation commission [Section 201(b)], and annual contributions by the state (\$3.0 million per year for eight years) to a reclamation and conservation account [Section 302(b)(1)]. It appears these measures remain in effect even if federal funds for the I&D system were not appropriated or the district is unable to meet the legislative requirements for the construction of the I&D system. It may be in the best interest of the state to pursue an amendment to the legislation eliminating some or all of the above conditions if the I&D system is not constructed.

Senator BRADLEY. Thank you, Mr. Hansen.
Mr. Garrett.

STATEMENT OF R. ROSCOE GARRETT, CHAIRMAN, BOARD OF DIRECTORS, CENTRAL UTAH WATER CONSERVANCY DISTRICT, OREM, UT, ACCOMPANIED BY DON CHRISTIANSEN, GENERAL MANAGER

Mr. GARRETT. I think everything has been pretty well covered.

I do not know whether you can really appreciate living in an area like I do. I am sorry for my voice going hoarse.

Senator BRADLEY. That is fine.

Mr. GARRETT. I happen to live by a beautiful mountain that is packed with snow, but if the melt comes too quick, it goes down past us. So, each year we sit with frustration wanting a better water supply.

And I am especially grateful for you and all those that have worked to bring this to this point.

[The prepared statement of Mr. Garrett follows:]

PREPARED STATEMENT OF ROSCOE GARRETT, CHAIRMAN, BOARD OF DIRECTORS,
CENTRAL UTAH WATER CONSERVANCY DISTRICT, OREM, UT

Mr. Chairman and Members of the Committee, my name is Ross Garrett and I am Chairman of the Board of Directors for the Central Utah Water Conservancy District. I am accompanied today by Mr. Leo L. Brady, a Member of our Board who will speak about the Uinta Basin elements of the Central Utah project; Mr. Tom Hatch, Garfield County Commissioner, who will speak about the Irrigation and Drainage features of the project; and Mr. Don Christiansen, the General Manager of the CUWCD.

I am sincerely grateful for the opportunity to speak to you today about the Central Utah Project Completion Act, S. 2969. As Members of the Subcommittee may be aware, the Central Utah Water Conservancy District ("CUWCD") was created by the State of Utah in 1965 and is charged with the responsibility of acting as the non-federal project sponsor for the Central Utah project.

By way of a personal note, I am a businessman and a rancher who has lived in Utah all my life. I love the State of Utah and am proud of the great contribution which it makes to the rest of the country. Although Utah is a unique state in many respects, it is not unique in the desire of its people to live well or in their concern for the future.

My livelihood in Utah and that of my family has been built upon a strong foundation laid down by the vision and selflessness of our parents and their ancestors. The best of my contemporaries and their children work hard to provide a similar foundation from which their children can pursue their dreams.

Mr. Chairman, this brings me to the real point I wish to convey to you today: on its most profound and important level, the completion of the Central Utah Project is not really about dams, canals, pipelines and diversion structures, nor is it about minimum streamflows, cubic feet per second, or acre-feet of storage. The completion of the Central Utah Project is really about laying the groundwork for the future, for without adequate water, the future of Utah is bleak.

The dream of bringing water from the Uinta Basin west over the mountains and into the Bonneville Basin in Central Utah dates back to the turn of this century. This idea was first conceived because of a very hard geographical fact in Utah—there is simply not enough water in those areas of the state where fertile soil and favorable climate make earning a good living possible. Fortunately, there is enough water in the state, but it takes a major engineering feat to bring it to where it can be more beneficially used.

The conveyance of water to where it is most beneficial and most needed is, of course, the main purpose of the Central Utah Project. As Members of the Subcommittee may be aware, CUP is perhaps one of the most complex and far reaching water resources projects in the nation. This complexity is, more than anything else, directly related to the complex geography of Utah itself. Unfortunately, this complexity has also led to many misunderstandings and to much of the controversy about the project itself.

The bill you have before you today is the product of literally years of work on the part of the Members of the Utah Congressional delegation, agricultural interests, water consumers, Utah environmental groups, power consumers, and many others. I would like to make certain that the Subcommittee appreciates the dedication and hard work that has gone into this legislation and that we owe a great debt of gratitude to all of these groups and individuals.

The product of these negotiations is a compromise in the truest and best sense: no one is completely satisfied with it, but it is fair, balanced, and attends to the interests and needs of all concerned parties. As a result of agreements forged by the hard work and dedication of the Utah delegation, the CUWCD, and the environmental

representatives, I am very pleased to report that the Central Utah Project Completion Act now enjoys the strong support of all who have been involved in its creation.

Of course the most compelling reason for this legislation is the need to increase the amount Congress is authorized to appropriate for the construction of the CUP. The current authorization ceiling the CRSP is \$2,227,922,000. This amount is \$679,854,000 short of the ceiling needed to complete the most economically and environmentally viable portions of the project.

Just a brief glance at this legislation reveals that it is obviously much more than just a simple increase in the authorization ceiling for the Central Utah Project. This legislation provides for the completion of both the Wasatch Front municipal and southern irrigation components of the Bonneville Unit, it provides funding for studies and implementation of methods for more efficient use of newly developed irrigation water and conjunctive use of our groundwater resources, it makes provision for the modernization and improved efficiency of existing irrigation systems, it requires water users to establish water conservation and use plans for CUP's water, and it addresses the water resources needs of the Uintah Basin by substituting several smaller and less expensive projects than those originally proposed in the old Upalco and Uintah Units of the CUP.

As the Subcommittee may be aware, the legislation also provides for the CUWCD to complete the design and construction of the remaining elements of the Bonneville Unit including the I&D system. Although the Bureau of Reclamation has done a fine job in the construction of the CUP thus far, we believe that we can complete the remainder of the Bonneville Unit for considerably less money. Specifically, we believe that this work can be performed at a savings of approximately 30% of previous Bureau estimates. These savings are reflected in this bill.

The bill also authorizes a feasibility study of improved irrigation efficiency for the improving in stream flows in the Strawberry basin and to achieve greater water conservation in Wasatch County. It also makes it clear that we do expect and are not attempting to overburden Wasatch County with providing for the Project's water supplies.

In addition, this bill would greatly improve the fish and wildlife measures associated with the project by returning water and providing minimum flow protection to the 240 miles of Utah streams and rivers, by canceling over \$100 million of outdated and in some instances ill-conceived fish and wildlife mitigation projects and substituting more cost effective and beneficial measures in their stead, and by creating and improving numerous recreation opportunities. The bill also provides a funding source for the restoration and improvement of wetlands, big game rangelands and fisheries throughout the CUP project area.

Similarly, the District is also committed to providing its share of the financing of the Utah Reclamation Mitigation and Conservation Account established in Title III. Until as late as 1999, we are prepared to back that commitment with a contribution to the account of \$3,750,000 dollars annually. I will say that, as with the rest of this legislation, the provisions of this title are also carefully constructed compromised designed to meet the needs of very diverse and sometimes competing interests.

This legislation proposes a 65% Federal and 35% local cost sharing arrangement for the I&D components of the system. The expanded scope of the various feasibility studies for improved use and conservation of water resources will be cost shared at a rate of 50%.

Finally, Title IV of this legislation accomplishes a very important goal, that of Indian water rights settlement. This legislation will allow the U.S. to meet its economic commitments to Ute Indian Tribe under their Deferral Agreement. Without going into specifics, the bill provides for an income flow, a development fund, establishment of tribal farming operations, and other benefits intended to improve the economic opportunities on the Uintah and Ouray Reservation.

As Members of the Subcommittee may be aware, the CUP with its I&D system has, from the beginning, been only one component of the massive Colorado River Storage Project authorized by Congress in 1956. This project was designed to bring numerous benefits to the Colorado River Basin States including water supply, flood control, hydroelectric power, irrigation water and recreation. As the CRSP was envisioned, large hydropower dams on the mainstream rivers would provide large amounts of power revenues which in turn would be used in part to repay the costs of the irrigation components of the CRSP which were beyond the ability of the farmers to repay.

It should be remembered that the larger mainstem dams weren't intended to be simply cash registers for the U.S. Treasury, but a component, an integrated unit of the larger plan of the Colorado River Storage Project. The first half of the CRSP has now been completed and the dams are producing low cost power for the benefit of

consumers across many western states. Much of the second half of the CRSP has been completed in the form of irrigation and water resources development in the other upper basin states. This legislation allows for the completion of the remaining commitment. It is now Utah's turn to complete its portion of this great project and key to that completion is the I&D system.

Mr. Chairman, the availability of water at a reasonable price has always limited the use of existing farmlands and the development of new farmlands in Utah. This water is critically needed to stabilize Utah's farm economy and I urge the subcommittee to support it.

Senator BRADLEY. Thank you, Mr. Garrett.
Mr. Brady.

**STATEMENT OF LEO L. BRADY, DUCHESNE COUNTY WATER
RESOURCES BOARD, DUCHESNE, UT**

Mr. BRADY. Mr. Chairman and Senator Garn, I appreciate the opportunity of being able to be here.

Just three or four comments, and you have my written testimony.

Senator BRADLEY. It will be included in the record in full.

Mr. BRADY. Thank you.

I am very pleased the way that this bill has finally been formulated. Our friends in the Ute Tribe—I think this gives to them a settlement to the deferral agreement that I was a part of negotiation with them in 1965. It has been a long time coming, but I think this does satisfy that. This will add stability and remove a lot of causes of controversy in our area over water rights—this part of the Ute settlement act. It finalizes the Ute Indian compact with the State although it does ask for re-ratification.

The projects we have out in Uinta Basin that I am particularly concerned with—we have spent a lot of local time and considerable local money in coming up with alternative, less costly irrigation dam sites and so forth that we think will do the job for us with the water supply we have.

We would welcome the opportunity—although there are a lot of hoops we have to jump through to get this done, we thank you for the opportunity of being able to do that and make these developments. The projects we have are going to be sensitive to the environmental issues. They will enhance and improve fisheries and protect wildlife areas and do those kinds of things.

I wish Senator McClure was still here. Our unemployment, Senator, has been on an average I would say in excess of 10 percent in the last 4 or 5 years. And the Ute Tribe—Chairman Duncan can address that, but I believe their unemployment among adult males probably exceeds 50 percent. So, we desperately need the opportunity to help ourselves along these lines.

I thank you for the opportunity of appearing here today.

[The prepared statement of Mr. Brady follows:]

**PREPARED STATEMENT OF LEO L. BRADY, DUCHESNE COUNTY WATER RESOURCES
BOARD, DUCHESNE, UT**

Gentlemen: I am pleased to be in attendance and have the opportunity to make the following statement regarding S. 2969, a bill to provide for completion of the Central Utah Project.

I have been personally involved with water development and administration in the state of Utah and particularly the Uintah Basin continually since the authorization of the Central Utah Project on April 11, 1956 (70 Stat. 105). I was in-

volved as a officer of the Central Utah Water Conservancy District when on Sept. 20, 1965 the District, the Ute Indian Tribe and the United States of America through the Bureau of Indian Affairs and the Bureau of Reclamation entered into a agreement (Contract No. 14-06-W-194) commonly known as the Ute Indian Deferral Agreement. This agreement enabled the Central Utah Project to move forward into construction.

We have before us today S. 2969 which contains the essential elements which are a very supportable and workable solution to the water development needs of the citizens of the Uintah Basin. The bill would also satisfy the commitments made to the Ute Indian people in the Ute Indian Deferral Agreement.

The State of Utah and the Ute Tribe have consummated the "Ute Indian Water Compact," this bill would give consent to the Tribe to enter into this compact subject to re-ratification by the State and the Tribe. This would add stability and remove causes of controversy over the quantification, distribution and use of waters claimed by the Ute Tribe.

Duchesne County has historically been a strong supporter of the development of its water resources. Without water storage in our area we would not have the economic base that we enjoy today. We have looked to the full development of the Central Utah Project as the vehicle to complete the needed water resource development in Duchesne and Uintah Counties. The Central Utah Project was develop water for the needs of Utah's citizens in the Uintah Basin, in the Bonneville Basin and the Sevier River Basin.

These substitute and less costly projects in the Uintah Basin would provide critically needed water to supplement thousands of acres of irrigated land, it would supply M&I needs. The supplemental water these projects would develop would make the difference between crop failures and successes. These projects will be developed in a manner sensitive to the environment, fisheries will be improved and enhanced, recreation opportunities will be improved, wildlife habitat would be protected and a more stable economic base will be created.

We urge you to give favorable consideration to this bill which is needed to bring to completion these projects which are so critical for the needs of our people.

Senator BRADLEY. Mr. Sefakis and then Mr. Maloney and then Mr. Hatch. I have an emergency call. I have to step out. If you could continue to give testimony, and I will be right back.

STATEMENT OF NICK P. SEFAKIS, GENERAL MANAGER, METROPOLITAN WATER DISTRICT OF SALT LAKE CITY, SALT LAKE CITY, UT

Mr. SEFAKIS. Thank you, Mr. Chairman.

It is my pleasure to be here this morning and submit testimony on behalf of the Metropolitan Water District of Salt Lake City on the Central Utah Project Completion Act, titles I through IV, on S. 2969. My name is Nick P. Sefakis. I am the General Manager of Metropolitan Water District of Salt Lake City and immediate past member of the Central Utah Water Conservancy District.

For the record I have submitted detailed testimony, and I will not go into all of the details that are in the written testimony, but I would like to take a moment and explain the Metropolitan Water District and how it fits into this package.

Our district is a political subdivision of the State of Utah and was organized in 1935 to provide long-range planning and development of a supplemental water supply for Salt Lake City. To that end, the district subscribed for 61,700 acre-feet of storage water annually from the Provo River Project constructed by the USBR during the 1940's.

Earlier this year, we had an historic occasion occur where in Sandy City, which is located in the southeast metropolitan area of Salt Lake County, was annexed into our district. So, both Salt Lake City and Sandy City have developed water supplies from the Wa-

satch Front streams and underground sources separate and apart from the district's sources of water supply. The district supplies supplemental wholesale M&I water to Salt Lake City and Sandy City which collectively serve approximately 350,000 people through some 101,000 connections embraced within an area of approximately 156 square miles.

In 1964 our district became part of the larger Central Utah Water Conservancy District, and in 1986 our district petitioned for 20,000 acre-feet of water from the Central Utah District to begin delivery in the year 2005. This petition was approved in 1986.

We participated in these lengthy negotiations, and the district supports title I through IV of S. 2969. This legislation constitutes a delicate balance between water development for traditional irrigation, municipal and industrial uses, and for the protection and enhancement of environmental values, including fish, wildlife and recreation uses. I would like to emphasize that any substantive amendment which might upset that delicate balance would undermine the consensus reached by the various interest groups.

Section 107 provides for a comprehensive water conservation plan with stated goals, evaluation of conservation measures, pricing studies, coordinated operations studies, creation of a Utah water conservation advisory board, compliance provisions and preservation of State law.

It should be noted that the district and its member cities have an ongoing commitment to water conservation and wise use of their water resources. A number of the section 107 measures are already in place. For many years we have implemented generally accepted water works practices to conserve our water resources, such as metering all of our connections, leak detection, elimination of declining block rates and public education.

Section 107 plan goals are ambitious but they are achievable. The choice of implementation methods to achieve those goals, for the most part, must remain with the local governing authorities—and I emphasize that—through their city councils, town boards, and respective planning and building authorities. Section 107 recognizes this concept in two important ways, that is, the conservation measures are recommendations only and nothing in that section shall be deemed to preempt or supersede State law.

I also, as Mr. Hansen mentioned, would like to praise the Utah delegation. It was a bipartisan effort, and it was a real monumental task for all of the congressional delegation for Utah, and we thank them very much for their work. I also would like to thank our legal counsel for the Metropolitan Water District, Mr. Joseph Novak, and also the legal counsel from Sandy City, who is now a member of our district, Mr. Lee Kapaloski, for their efforts in these negotiations.

In conclusion, I respectfully urge the passage of the Central Utah Project Completion Act.

And what I was going to say, Mr. Chairman, before you left, although I have never met you, I feel as though I know you. I have followed your governmental career and it has been an outstanding one, but more previous to that, I followed your professional basketball career, and I really enjoyed watching you play basketball. So, thank you for being here today.

[The prepared statement of Mr. Sefakis follows:]

PREPARED STATEMENT OF NICK P. SEFAKIS, GENERAL MANAGER, METROPOLITAN
WATER DISTRICT OF SALT LAKE CITY, SALT LAKE CITY, UT

Chairman Bradley and Members of the Subcommittee:

My name is Nick P. Sefakis. I am General Manager of the Metropolitan Water District of Salt Lake City and appreciate the opportunity to appear before your Subcommittee and provide testimony on behalf of the District in support of the Central Utah Project Completion Act.

The Metropolitan Water District of Salt Lake City is a political subdivision of the State of Utah and was organized in 1935 to provide long range planning and development of a supplemental water supply for Salt Lake City. To that end, the District subscribed for 61,700 acre-feet of storage water annually from the Provo River Project constructed by the United States Bureau of Reclamation during the 1940's and 7,940 acre-feet of storage water annually from the Little Dell Lake Reservoir Project now under construction by the United States Army Corps of Engineers.

Early this year, Sandy City, located in the southeast metropolitan area of Salt Lake County, was annexed into the District. Both Salt Lake City and Sandy City have developed water supplies from Wasatch Front streams and underground sources separate and apart from the District's sources of water supply. The District supplies supplemental wholesale municipal and industrial water to Salt Lake City and Sandy City, which collectively serve approximately 353,000 people through some 101,000 connections embraced within an area of about 156 square miles.

In 1964, the District became a part of the larger Central Utah Water Conservancy District which has the overall responsibility to repay to the United States the reimbursable costs of the Bonneville Unit of the Central Utah Project. The District holds an approved petition for 20,000 acre-feet of Bonneville Unit Project municipal and industrial water with anticipated deliveries to begin in the year 2005. Accordingly, the District is obligated to pay its share of the Project reimbursable costs through ad valorem taxes and water sales revenues. In addition, the District has entered into a contract with the United States Bureau of Reclamation to pay the District's share of 2/7ths of the cost of the Jordan Aqueduct System to convey its Project water to its delivery system. Thus, the District has made a substantial investment and commitment to the successful completion of the Central Utah Project.

The District supports Titles I through IV of S. 2969, comprising the Central Utah Project Completion Act as presently constituted. While the District participated in the formulation of the whole Act, it was more directly involved in the drafting of section 107, entitled "Water Management Improvement". That Act is a consensus bill negotiated over several years among a wide range of interest groups. It constitutes a delicate balance between water development for traditional irrigation, municipal and industrial uses and for the protection and enhancement of environmental values, including fish, wildlife and recreation uses. Any substantive amendment which might upset that delicate balance would undermine the consensus reached by the various interest groups.

Section 107 provides for a comprehensive water conservation plan with stated goals, evaluation of conservation measures, pricing studies, coordinated operations studies, creation of a Utah Water Conservation Advisory Board, compliance provisions and preservation of state law. However, it should be noted that the District and its member cities have an ongoing commitment to water conservation and wise use of their water resources. A number of the section 107 measures are already in place. For many years, the District and its member cities have implemented generally accepted water works practices to conserve their water resources, such as metering all connections, leak detection, elimination of declining block rates and public education.

The Section 107 Plan goals are very ambitious but the District believes those are achievable. However, the choice of implementation methods to achieve those goals, for the most part, must remain with the local governing authorities through their city councils, town boards and respective planning and building authorities. Section 107 recognizes this concept in two important ways, i.e., the conservation measures are recommendations only and nothing in that section shall be deemed to preempt or supersede state law.

In conclusion, the District respectfully urges the passage of the Central Utah Project Completion Act. The District trusts that the foregoing comments will receive the favorable consideration of the subcommittee.

Senator BRADLEY. Yes, I spent a few nights in the Salt Palace.

Thank you very much.

You serve 355,000 people?

Mr. SEFAKIS. That is correct.

Senator BRADLEY. And what do you estimate that number will be by the year 2000?

Mr. SEFAKIS. Well, we expect that the major metropolitan area will be probably up around 400,000.

Senator BRADLEY. Mr. Hatch? I am sorry. I had Mr. Maloney next.

STATEMENT OF GERALD K. MALONEY, PRESIDENT AND CHAIRMAN OF THE BOARD, SALT LAKE COUNTY WATER CONSERVANCY DISTRICT, WEST VALLEY CITY, UT

Mr. MALONEY. Thank you, Mr. Chairman. I am over on this side of the aisle over here. I appreciate this opportunity to appear before your committee today to discuss Senate bill 2969.

As our testimony indicates, I am chairman of the board and president of the board of the Salt Lake County Water Conservancy District. We are the other agency in Salt Lake County, along with Metropolitan, that provides not only wholesale, but retail water, as well as irrigation water to all of the inhabitants of Salt Lake County. Our district comprises approximately 200 square miles, and we service water to 19 wholesale agencies and approximately 7,000 retail agencies.

And just the past 2 years, through a complicated exchange, we are now delivering 40,000 acre-feet of irrigation water. And we are quite proud of this exchange because what we have done is taken high quality mountain water and put it into the municipal system and taken a low quality irrigation water out of Utah Lake and replaced it into the irrigation system. It has extended the irrigation system of the farmers in two of our districts who normally are out of the high quality water by the end of July and extended their growing season up to approximately the 15th of October. These types of exchanges in my mind are the things where water conservation really comes into play. We do not put the high quality water on the land for agricultural use.

Our district subscribed in the early 1970's to 50,000 acre-feet of central Utah water. It was in 1985 that our district, through another exchange called the Deer Creek-Strawberry exchange, put into repayment and began to pay to the Federal Government over \$1 million annually as repayment on the Bonneville Unit of the Central Utah Project.

We anticipate when the project is complete—and I understand your concern of the Jordanelle Dam, sir, but that is where we get our 50,000 acre-feet of water from, as well as the 20,000 that will go to the Metropolitan Water District and another 10,000 that will go to Utah County interests.

We recognize the cost of this water, but when you are thirsty, there is no cost that you will not pay for a drink of water. Right now our average cost of water to our wholesale customers is approximately \$140 an acre-foot. We anticipate that the Central Utah water when it comes to us will be, with treatment costs, approximately \$175 an acre-foot. And as section 107 spells out, a wise and

prudent use of this water must be made before we look to other sources, such as the Bear River. And we can promise you, sir, that that \$300 to \$400 an acre-foot water in Bear River is a source that we will look at only after we have put all of our low cost water to a beneficial use. But it is an integral part of our plan to bring an additional 50,000 acre-feet of water into Salt Lake County which is a necessity in order for us to maintain the 8-percent to 10-percent annual growth that our district has experienced since 1952 when it was put into being.

We are privileged to be here and we thank you for the opportunity of testifying on behalf of this bill. And we certainly support the irrigation and drainage system because we see it as a means, through water exchanges, of bringing benefit to the State of Utah clear from the Idaho border to the Arizona border.

Any questions we would be happy to respond to and thank you.
[The prepared statement of Mr. Maloney follows:]

PREPARED STATEMENT OF GERALD K. MALONEY, PRESIDENT AND CHAIRMAN OF THE BOARD, SALT LAKE COUNTY WATER CONSERVANCY DISTRICT, WEST VALLEY CITY, UT

Chairman Bradley, members of the Senate Subcommittee on Water and Power: My name is Gerald K. Maloney. I am the President and Chairman of the Board of the Salt Lake County Water Conservancy District. It is a pleasure for me to testify before you on behalf of the Salt Lake County Water Conservancy District ("District").

The District supplies municipal and industrial ("M&I") water to 19 cities and governmental entities. In addition, the District supplies retail water to 7,000 families and businesses not served by other governmental entities. Last year the District delivered approximately 60,000 acre-feet of treated water, making it one of the largest suppliers of M&I water within the State of Utah. The District also supplies 40,000 acre-feet of irrigation water within its service area. The District's service area is approximately 200 square miles in Salt Lake and Utah Counties.

The District is a part of the Central Utah Water Conservancy District. The District's relationship with the Central Utah Project is both long-standing, and extensive. For example, the District operates the Jordan Valley Water Treatment Plant, a facility built by the Central Utah Water Conservancy District to treat Central Utah Project water, for the benefit of all Salt Lake County residents. The Jordan Valley Water Treatment Plant is the largest water treatment facility in Utah and has an expected treatment capacity of 180 million gallons per day.

Further, in 1985, the Salt Lake County Water Conservancy District, along with the Central Utah Water Conservancy District, and the Metropolitan Water District of Salt Lake City, entered into contracts with the United States for repayment of the Jordan Aqueduct. The District utilizes 5/7ths of the aqueduct capacity to serve its Salt Lake County customers, and the Metropolitan Water District of Salt Lake City utilizes the remaining 2/7ths.

The District has subscribed for 50,000 acre-feet of CUP water from Jordanelle Reservoir, making the District the single largest purchaser of M&I water furnished by the Central Utah Project. This 50,000 acre-feet of water is crucial to the Salt Lake County Water Conservancy District and its customers. Without Central Utah Project water and facilities, the District will have insufficient water and capacity to adequately supply its water users by the year 1995. With Central Utah Project water, and the progressive conservation measures called for in S. 2969, the District, based on current projections, should have adequate water supplies through the year 2015.

Because of the District's extensive and valid interest in the Central Utah Project, the District has participated with the Central Utah Water Conservancy District and other water users, Utah's Congressional Delegation, and environmental groups in the negotiation and drafting of S. 2969.

I believe S. 2969 represents the "high water mark" in water development legislation. The environmental mitigation measures and projects are worthwhile, progressive, and long overdue. The Water Management Improvement Plan may serve as a prototype for future water development legislation. It is toward the Water Manage-

ment Improvement Plan, contained in section 107, that I wish to direct most of my comments.

The Water Management Improvement Plan, set forth in section 107, is a product of long, albeit productive, discussions and negotiations with water users, including the District, environmentalists, State water agencies, and Congressional representatives.

The plan is both unique and practical. Section 107(a) sets forth the purposes or goals of the Water Management Improvement Plan. The District and other water users are committed to the goals set forth in Section 107.

Pursuant to section 107(a)(6) the District notes that it does not intend to import Bear River water into Salt Lake County until its 50,000 acre-feet of Central Utah Project water has been put to prudent and efficient use. The District estimates that by using and conserving Central Utah Project water, the District will be able to postpone, until the year 2015, importing Bear River water into Salt Lake County. However, the District believes that Bonneville Unit water should be put to prudent and efficient use whether or not Bear River water is imported. For this reason, the District supports the amendments of section 107(a)(6) proposed by the State of Utah.

The Central Utah Project water makes it possible for water users, the State, and the environmental community to take the time necessary to prudently develop the Bear River. In fact, a State Bear River Task Force has been organized and is in the planning process for a coordinated and responsible development of the Bear River. When completed, the Bear River will provide approximately 120,000 acre-feet of water needed to restore, expand, and improve the Bear River Migratory Bird Refuge, an additional 100,000 acre-feet of M&I water to Salt Lake County and other M&I users, and much needed irrigation water for northern Utah counties.

Upon passage of Central Utah Project reauthorization, the District, together with the Central Utah Water Conservancy District, and other water users, will develop a Water Management Improvement Plan consisting of measurable goals, an inventory of proposed conservation measures, and an analysis of each proposed measure, together with a schedule for implementing the conservation measures. The plan is due January 1, 1994. I am pleased to report that the District, in anticipation of the passage of S. 2969, has met with its customer agencies and other Salt Lake County water users and State agencies to begin the development of the Water Conservation Plan.

The water saved by the conservation measures, implemented by the District, will extend the Salt Lake County water supply.

Section 107 also authorizes progressive studies for:

- (1) Water conservation pricing (Section 107(c))
- (2) Coordinated operations (Section 107(d))

The District believes that both of these studies will be beneficial. Recently, the Salt Lake County Water Conservancy District, the Metropolitan Water District of Salt Lake City, Sandy City, and Salt Lake City entered into a Conjunctive Water Management Plan designed to accomplish the objectives contained in section 107(d)(A-G) of S. 2969.

The Water Management Improvement Plan also calls for the creation of a Utah Water Conservation Advisory Board, the purpose of which is to draft water conservation suggestions which may be adopted by local governmental entities. The District hopes to take an active role with the Board to construct cost-effective and environmentally sound regulations for adoption in the District's service area. The District has long recognized the need for conservation. For example, all of the District's customers are metered. In addition, the District uses a state-of-the-art leak prevention system. Finally, the District recently adopted a basic Water Conservation Plan.

In summary, the District believes that section 107 will foster new and creative methods for the prudent and efficient use of water. The District looks forward to being a participant in the process.

In closing, I would like to thank Utah's Congressional Delegation, Senators E. Jake Garn and Orrin G. Hatch, Congressmen D. Wayne Owens, James V. Hansen, Howard C. Nielson, and their staffs, for their tireless efforts in working on the Central Utah Project. I also appreciate the many hours of work Don A. Christiansen, General Manager of the Central Utah Water Conservancy District, has spent in developing the consensus represented by this legislation. Finally, I appreciate the input and assistance of Ed Osann and David Conrad of the Natural Wildlife Federation. Thank you.

Senator BRADLEY. Thank you, Mr. Maloney.
Mr. Hatch.

**STATEMENT OF THOMAS V. HATCH, CHAIRMAN, GARFIELD
COUNTY COMMISSION, PANGUITCH, UT**

Mr. HATCH. Thank you, Mr. Chairman. I am used to being last being from the outermost extremities of the Conservancy District. My name is Tom Hatch and I am Chairman of the Garfield County Commission, Garfield County being the southernmost county within the Central Utah Water Conservancy District.

Completion of the system is vitally important to those who I represent here today, especially the I&D system. You mentioned in your opening remarks I think that you thought maybe it was just a dream of an earlier generation, but I am here to tell you that it is also the dream of the current generation. It has been pared down from what was originally I think a \$440 million project to about \$150 million.

The area which the I&D system will serve is currently suffering one of the most critical droughts in our State's history. Not only is irrigation water in critically short supplies and in some places non-existent, but municipal water in many of the small rural communities is also in critical short supplies. In one of the neighboring communities, where I live, the Town of Tropic, under the rim of Bryce Canyon, the National Guard is currently hauling drinking water into that small community of about 400 people. And I would like to see OMB do a beneficial cost analysis onto that also.

The I&D system, as Mr. Hansen has indicated, is as much about redistribution of population and wealth in our State as it is about redistribution of water. If we are ever going to have any economic growth in rural Utah, an adequate water supply must be developed.

Those people that I represent here today are many of them descendants of the first pioneer settlers who came into the Great Basin into the State of Utah. They are hearty people. They have overcome adversity many times. I am not here to tell you today that failure of this bill to pass is going to force them to leave the land that they have conquered as OMB maybe has insinuated in their remarks. They are going to hang in there, and they are going to be tough.

They support this legislation. It is not easy for my constituents to swallow. As has been alluded to by many of the previous remarks, it reflects a great deal of compromise by both sides. And for me to talk to the old boys with the shovel in their hands at the coffee shops in the morning and tell them about the millions of dollars that are going into environmental mitigation, it is a tough job to convince them. But they have sent me back here as their spokesman to support the project and support all ends that have come together here in putting this legislation together.

We have pledged our support for the increased local cost share knowing very well that those local funds are going to be very hard to come by in an economically depressed area. Mr. Brady indicated that in Duchesne County the employment rate is above 10 percent. In the county I represent it is up around 16 percent. So, local cost share funds are extremely hard to come by, but we will find a way to come up with them because we realize that an adequate water supply is so important in the future of rural Utah.

We thank you for the opportunity to comment here today.
[The prepared statement of Mr. Hatch follows:]

PREPARED STATEMENT OF THOMAS V. HATCH, CHAIRMAN, GARFIELD COUNTY
COMMISSION, PANGUITCH, UT

As the Members of the Subcommittee are aware, the Bonneville Unit is a multifaceted, major engineering work. Construction on this complicated project began in 1966 and the collection systems are now nearly complete, and in fact the project has delivered some Municipal and Industrial water supplies. Water diverted from the Uinta Basin and Wasatch Mountains is conveyed westward through tunnels, natural stream beds, pipelines, and other facilities into the Bonneville basin. The complexity of the project has called for sophisticated solutions to difficult problems. As a result, the cost for constructing the I&D systems will be funded at a level of \$150,000,000. However, there are many other costs necessary to complete construction on this vital component.

The I&D system we consider essential to this measure will cost a total of \$249,538,000 and will bring with it water sufficient to provide supplemental irrigation water to 166,130 acres of land and full service irrigation water to 16,990 acres of presently developed land. The I&D system is comprised of two major elements: the main conveyance system of the Bonneville Unit and the distribution systems of the Diamond Fork System and Uinta Basin.

The main conveyance system is designed to transport water from the Spanish Fork Canyon through South Utah County, Juab County and continuing on south to the Sevier Bridge Reservoir. The total cost of this component will be approximately \$231,000,000 of which \$150,00,00 will be the federal share.

The distribution system will deliver water from the main conveyance system to the individual farms and is estimated to cost a total of \$52,500,000—all of which is to be borne by local funding sources with no Federal participation. Specifically, the State of Utah, through its Board of Water Resources, has in place a loan and grant program that will assist the local farmers and irrigation companies to build these badly needed facilities. The CUWCD will also assist local farmers in paying for distribution systems.

In addition to the above proposal, the CUWCD, the State of Utah, and local water users have been cooperating in the development of a plan to maximize the use of project I&D water within the Upper Sevier River Basin. This plan includes the construction of a \$10,000,000 dam near Hatch, Utah using all local funds. This facility would be the key feature in a system that would use the 28,000 acre-feet designated for the Upper Sevier River areas as a catalyst and would provide for an increase in the project water supply from that 28,000 to between 35,000 to 40,000 acre-feet.

This bill also authorizes \$10 million dollars for the study and development of groundwater recharge, management, and the conjunctive use of ground water and surface water resources. We believe that this relatively small investment will greatly improve project benefits and will help solve destructive maximum and minimum stream flow problems on the Provo River.

In connection with providing for the completion of the I&D system, Title II of this legislation outlines in detail and ensures that the best and most cost effective fish, wildlife, and recreation mitigation is performed in a timely manner. Although there will be others here today whose testimony will focus on this particular aspect of the bill, I would like to say that the CUWCD is fully committed to cooperating with and assisting in the implementation of the mitigation measures authorized in Title II. A good deal of Utah's heritage, as well as much of its future, rests with our state's natural beauty and bounty. It is our desire, therefore, that this bill adequately reflect that philosophy, which we believe it does.

Mr. Chairman, I urge you to support this critically important legislation. Again, thank you very much for allowing me to present this testimony.

Senator BRADLEY. Thank you, Mr. Hatch for your testimony. It is always good to hear from somebody who is right out there and dealing with people on a day-to-day basis trying to explain things that people in Washington take for granted. I appreciate your testimony very much.

I have only one question, and I assume that can either be Mr. Christiansen or Mr. Garrett or someone who will speak for the Utah Water Conservancy District. And it goes to the point that the

Commissioner made earlier about liability. It seems to me to not be an insubstantial question. His suggestion was that terms and conditions be arrived between the Secretary and the Water Conservancy District. I wondered, do you have an opinion?

Senator BRADLEY. Mr. Garrett, you will yield to Mr. Christiansen?

Mr. GARRETT. Yes, sir.

Mr. CHRISTIANSEN. I will be happy to respond there, Mr. Chairman. It is good to be with you today, by the way.

This is not an issue that we have not considered in the negotiations and the talks that we have had in coming to the point of this bill. The liability I think is an issue that we can handle adequately. The liability as far as who is going to construct it and finish it if we run out of money—I think the bill adequately addresses that in that the Federal share is \$150 million indexed, but capped at \$150 million. If it costs us substantially more than our 35 percent on top of that, we are the agency who is going to be responsible for finishing that, and that is one of the reasons why we are so doggone concerned about being the construction manager of that thing to make sure that we do come in within budget. We have had several projects that we have done under the D&MC with the Bureau of Reclamation and have been very successful in doing it. So, we think we can handle that.

Insofar as the overall liability in the case of a failure or something of that nature, the damage that may occur to other people's property and what have you, I think that would have to be negotiated out, but I would suppose that in the beginning we are an agency that carries a high liability coverage on ourselves for anything that we operate or would be responsible for.

It is my understanding that we would build this project as part of the Central Utah Project that is federally owned. We would probably purchase rights-of-way and what have you and deed them over to the United States of America. The facilities which we built would inure to the ownership of the United States of America. We would probably be in line as the first liability there, but I am sure that the U.S. Government would not be held harmless in a project on features which they own. So, I am sure that there would be some liability extension there, but certainly we are going to be the first ones if there is a rupture, if there is a failure of a system.

I think we have one of those that is a very good example. The Jordan III aqueduct system a few years ago ruptured. It has cost the Bureau something in excess of \$6 million to repair that and put it back into service. That is being added to our repayment contract as it is now. I do not see any difference in that. We are responsible for whatever those additional costs are. We have some disagreement with them, that we are paying for it once and it fails because of whatever we had no control over, but now they are turning to us and saying we ought to pay for it again. We have some trouble with that, but that has been the process up till now, and I do not see that it changes a great deal in the future.

Senator BRADLEY. The fact that you are the responsible construction party, you can handle by your own insurance. Is that what you are saying?

Mr. CHRISTIANSEN. Absolutely. We have done that previously on all of these construction projects. I think that is our responsibility.

Senator BRADLEY. What is the amount of that insurance?

Mr. CHRISTIANSEN. At the present time, we carry \$10 million which may or may not be adequate, but we carry \$10 million at the present time.

Senator BRADLEY. I sure would not feel comfortable out there with \$10 million liability coverage when you are building something as big as this.

Mr. CHRISTIANSEN. We will not be building a dam and things of that nature where we will have that kind of exposure like you would have on some of the other features either.

Senator BRADLEY. I do not know how expensive it is, but it seems to me like you could allay a lot of fears if you had adequate coverage.

Your point is that the problem with terms and conditions approved by the Secretary is what? That you have the responsibility to build this. You have a certain Federal commitment, \$150 million, over time reflecting inflation, and if you go above that, you have to pay it or eat it yourself. Right?

Mr. CHRISTIANSEN. I think that has been our understanding. If we exceed that \$150 million plus our 35 percent, we have nowhere else to look but ourselves to complete that project.

Senator BRADLEY. And you would have no objection to making that clear if there is any ambiguity.

Mr. CHRISTIANSEN. Certainly.

Senator BRADLEY. I am not saying that there is ambiguity. I am just reacting to testimony that I heard today.

Mr. CHRISTIANSEN. Certainly. I think that has been the intent in the bill, that there would be a cap of \$150 million for Federal involvement.

Senator BRADLEY. As somebody who is a professional who has worked here in the field a lot, what has been the problem with the Bureau?

Mr. CHRISTIANSEN. That is a difficult question to answer.

— Senator BRADLEY. I could gather by the pause. I know Senator Garn has his opinions of what is wrong with the Bureau, and I do not disagree. I am just curious from the standpoint of a professional. You are in the business of doing a lot of the same things, and you are doing it for, it appears to be, a better return to the taxpayer.

Mr. CHRISTIANSEN. I do not want to sound insensitive. I do not want to be insensitive to the Bureau of Reclamation. However, it would be my understanding that one of the first concerns out of the budget that was allocated to them each year, out of their appropriation—the first concern was to make sure that everybody got a paycheck regularly for 52 weeks. And that would mean no reduction in force. And that is a very difficult thing for us to do. If you are in private business, you certainly would want not to lay people off, but you certainly cannot keep people on when there is no work for them to do. We went through an extensive time there—and Senator Garn has referred to it a number of times this morning—where the overhead factor was 54 or 56 percent. The Utah delegation worked their fannies off to get \$80 million of annual appro-

priation and 56 percent of it went to overhead. Some of it may have been transferred to other projects within the Upper Colorado River region, and we would end up with \$10 million going into construction.

Senator BRADLEY. As a comparison, what is your overhead?

Mr. CHRISTIANSEN. Our overhead we have assumed is in the neighborhood of 10 percent, not to exceed 10 percent.

Senator BRADLEY. Quite a difference.

Well, I thank you all very much for your testimony. I found it very helpful. If we want some clarification, I suppose that Mr. Christiansen and Mr. Garrett directing Mr. Christiansen would be willing to provide that for the committee.

Mr. GARRETT. He does the hard work.

Senator BRADLEY. But you are the boss.

Mr. GARRETT. Okay. Do it, Don.

[Laughter.]

Senator BRADLEY. Senator Garn, did you have any statements?

Senator GARN. No. Due to the lateness of the hour, these gentlemen have listened to me for so many years, that I will not take their time or yours at this point.

Mr. GARRETT. We have enjoyed listening to you.

Senator BRADLEY. Thank you very much, gentlemen, for your testimony.

Our next witness is Mr. Luke Duncan, Chairman, Ute Indian Tribe. Chairman Duncan, welcome to the subcommittee, and the floor is yours.

STATEMENT OF LUKE DUNCAN, CHAIRMAN, UTE INDIAN TRIBE, FORT DUCHESNE, UT, ACCOMPANIED BY CURTIS CESSPOOCH, VICE CHAIRMAN, UTE TRIBAL COUNCIL; AND DAN ISRAEL, WATER ATTORNEY

Mr. DUNCAN. The Honorable Chairman, Mr. Bradley, and the Subcommittee on Water and Power, I am glad to be here today to testify, and I leave you with my testimony.

Senator BRADLEY. Your full testimony will be in the record. Make no mistake about that, and if you could just share a few thoughts with us, that would be very helpful.

Mr. DUNCAN. Thank you.

I would like to start by telling you what it took for me to be here with you today. I left my reservation home yesterday morning, and driving through the reservation and seeing the dwellings of my people in the early morning darkness, I could see the fields that have dried up through lack of water where we experienced here in the last 4 or 5 years the drought, and it does not seem to be getting any better.

As I drive through, I come through Strawberry, a beautiful area we have there looking out into the reservoir, and proceed on toward Salt Lake City. I come up on the hill, and I look over Jordanelle Dam which at that time I get out and I feel the frustration, my frustration, as I stand and I look out and look at the construction that has been going there. And then I realize at that time what has been happening to me and my people. And I come before

you today with frustration in my mind and in my heart not only for myself but to the 3,200 people that I represent here today.

In seeing projects that go up and around the Indian reservation and to see our land the way it is, to see our springs in late summer go dry—we leave for work in the morning, we have water. When we get home at night, we do not because our springs are low. We are having water problems there.

Which brings me to the situation that we are talking about here, the CUP, and also the agreements that have been made with the Ute Indian Tribe. As I have said many times before, this is an issue that I have inherited. When the initial signing took place in 1965, I was just a young man living on the reservation. And here we are in 1990, and we are still struggling with this. And I wonder where the problem really is.

But I want to bring to your attention right now the initial agreement signed in 1965 telling the Ute Indian Tribe that you are going to build dams for us, you are going to build storage facilities for my people, and that through that we will have economic gain. We have not seen those facilities being built, and yet we sit and talk about funding. Our reservation has gone dry.

We have a lot of problems there. You cannot see from Washington what our problems really are. We have economic problems, as well as social problems. And you all know that one of the answers, not the total answer, to social problems is employment. Now, what we feel as a tribe we have asked for in the agreement. We stand behind that as being justified. As I mentioned, we have unemployment. You are talking roughly 85-percent unemployment on the Indian reservation. Social problems because of the unemployment. We want to see the promise that the United States made with our people, and that is what we would like to see completed. We would like to see that promise, and we would like to see economic benefits to our people enriched by this agreement that we are talking about today.

But we have come a long way to be with you today.

And I would like to mention that the agreement where the tribe became involved in 1965—we did not come to the Government. The Ute Indian Tribe did not come to Washington and say this is what we want. You came to the tribe knowing that the tribe had to be a major factor in order to move the water to the Wasatch Front. Our people agreed. I see a signature of our ex-chairman who is no longer with us. He signed this agreement, and I honor that. It means something to me. But we are not getting what that piece of paper is saying there. Yet, we are questioning. If we were to pay for the projects today what is in this agreement here, we are looking at roughly \$506 million and what we are asking for, roughly \$220 million, is not even half of that cost today. But yet, we still question it.

The United States at that time told my people that they would take our water and they would help us. The Government told us do not worry, stay still. We will help you with a water project to get you back on your feet economically to make your people self-supporting. We have been waiting. We have been waiting since 1965 which takes me back to my frustrations as to what I felt yesterday morning.

We are still waiting for the projects to be built and somehow maybe if you could see the picture that I am trying to paint for you, which is not a pretty picture, then maybe we can proceed. I am here today to ask you to take a good look at the project and also what we asked for in the project and compare them to the conditions that we have on the Indian reservation, which is very hard to see from here.

But today I am honored to be here with you, and I would like to see the projects completed for my people. As I said earlier, I do represent a lot of people here, old people as well as young children, and I am here for them today.

Thank you.

[The prepared statement of Mr. Duncan follows:]

PREPARED STATEMENT OF LUKE DUNCAN, CHAIRMAN, UTE INDIAN TRIBE, FORT DUCHESNE, UT

I. INTRODUCTION

My name is Luke Duncan. I am Chairman of the Ute Indian Tribe of the Uintah and Ouray Indian Reservation in northeastern Utah. I am here to testify in support of the Central Utah Project Completion Act, and in particular Title IV of that Act. Title IV of the Act provides for a long-awaited Ute Indian water rights settlement. That settlement involves both a quantification of the Ute Indian Tribe's Winter's rights, as well as a settlement of long-outstanding claims relating to the development of the Tribe's water resources and the Central Utah Project.

The Ute Indian Tribe is pleased with the opportunity to present its views to this distinguished Subcommittee today, and looks forward to the opportunity of working with the members of the Senate Energy and Natural Resources Committee to implement what for the Tribe will be a critical step in its goal of achieving economic self-sufficiency.

II. INTRODUCTION TO THE UTE INDIAN TRIBE

The Ute Indian Tribe is made up of several bands, one of which is indigenous to Utah, and several of which were placed on the Reservation during the nineteenth century as the result of a federal policy to move the Ute Indians out of the State of Colorado. The Ute Reservation is made up of two separate reservations; the first is the reservation of 1864, the Uintah Valley Reservation, and the second is the executive order reservation of 1882, the Uncompahgre Reservation. Together they encompass nearly 6,000,000 acres of Indian land, fee land, and federal land. The Tribe holds approximately 1,000,000 acres of the Reservation in trust.

Members of the Ute Indian Tribe are poor and must struggle to maintain economic survival on their reservation. The reservation is located in isolated northeast Utah. While the Ute Reservation is blessed with oil and gas resources and water resources, development of modern economic employment opportunities is limited. In addition to mineral development, the Tribe engages in agricultural enterprises and as a part of this settlement seeks to achieve what it believes can be a successful agricultural/feedlot operation to benefit tribal members.

The Tribe in conjunction with the Bureau of Indian Affairs and the United States Department of Indian Health Services provides a broad array of social services to its members. There are approximately 3,200 members of the Ute Indian Tribe who live within the Reservation.

At the time of the establishment of the 1864 and 1882 reservations, Congress reserved sufficient water rights from the streams of the Colorado River to fulfill the purposes of the reservation. These *Winter's* rights water rights are essential to the future livelihood of the Tribe. A small portion of those *Winter's* rights were fixed in two long-standing federal decrees. However, the great bulk of the *Winter's* rights of the Tribe have not been quantified and have not been secured. As noted above, this settlement legislation is designed in part to secure a fair quantity of water for the Tribe and to permit the Tribe and its members to utilize those waters for their future economic welfare.

III. UTE INDIAN TRIBE WATER CLAIMS ARE INEXTRICABLY CONNECTED TO THE CENTRAL UTAH PROJECT

The settlement of the Ute Tribe's water rights is included as a component of the Central Utah Project Completion Act, because development of the Tribe's water rights and the quantification of the Tribe's water rights are inextricably tied up with the development of the Central Utah Project. Even before Congress enacted the Colorado River Storage Project Act of April 11, 1956, 70 Stat. 105, Indian and non-Indian citizens in the State of Utah had begun to explore ways for developing the water resources of the Colorado River allocated to the State of Utah. As the attached Exhibit A (History of the Ute Indian Tribe's Contribution to the Central Utah Project) shows, all parties understood that Ute Indian water would have to be "loaned" to the Central Utah Project ("CUP") in order for the Project to develop a sufficient amount of water to justify Congress' expenditure of hundreds of millions of dollars to arrange a long-term secure water supply for the Wasatch Front. As a result of those understandings, on September 20, 1965, the United States, the Central Utah Water Conservancy District ("District") and the Ute Indian Tribe entered into a Deferral Agreement which provided the United States and the District with approximately 60,000 acre feet of water which since time immemorial had passed through the Ute Indian Reservation in the Uintah Basin. As a result of the 1965 Agreement, the Tribe made available this water for trans-basin diversion to the Bonneville Unit. Attached as Exhibit B is a copy of the 1965 Deferral Agreement.

While the State of Utah was not a signatory to the 1965 Agreement, the State committed itself as part of the Agreement to help in the quantification in the Tribe's *Winter's* rights by settlement and negotiation rather than by litigation. To that end, the State of Utah in consultation with the Tribe and its engineers enacted a state law called the Ute Indian Compact in 1980, which proposed a quantification of *Winter's* rights water for the Ute Indian Tribe and proposed a sharing of the responsibility for the administration of that water between the State of Utah, the Ute Indian Tribe and the United States. That proposed quantification has not been formally adopted by the United States and the Ute Tribe. Nevertheless the Ute Tribe believes that it represents a fair and equitable basis for quantification of its water rights and seeks Congressional ratification of that Compact as a part of this settlement.

In consideration for the Ute Tribe freeing up 60,000 acre feet of water for diversion into the Bonneville Unit and for its additional commitment to defer agricultural development in order to assist, and not impair, the development of the CUP, the United States committed itself to develop a substantial portion of the water rights of the Tribe. Specifically, Congress authorized the construction of the Upalco Unit and the Uintah Unit. Both units, located in Uintah Basin, were to provide substantial water right benefits to the Ute Indian Tribe and its members. In addition Congress authorized planning for a third unit, the Ute Indian Unit, in recognition of express "commitments" made to the Ute Indian Tribe by the United States in the 1965 Deferral Agreement. See 43 U.S.C. § 620a and p. 7 of the attached Exhibit A. Over the years several alternative Indian projects have been considered, including the Leland Bench Project to supply the Tribe with badly needed water from the generous flows of the Green River. To date, none of these projects has been built and it is the judgment of the Ute Indian Tribe that for engineering and cost-effectiveness reasons, they will not be built. Hence, a major part of this Title IV of the Central Utah Project Completion Act is designed to settle outstanding claims vis-a-vis the United States which arose out of the 1965 Deferral Agreement and put the Tribe in an economic position comparable to the position the Tribe would have enjoyed had the commitments of the United States made in the 1965 Deferral Agreement been fully honored. That is, the settlement is designed to put the Tribe in a position to develop a considerable measure of economic self-sufficiency.

IV. OUTLINE OF THE QUANTIFICATION SETTLEMENT "THE UTE INDIAN COMPACT"

The Ute Indian Compact enacted by the Utah Legislature in 1980 and currently under review by the parties contemplates that 481,000 acre feet of water will be committed as reserved water rights for diversion to the Ute Indian Tribe as its allocation of Colorado River water. Of that diversion amount the Tribe would be entitled to approximately 250,000 acre feet of depletion. It is contemplated that the Tribe through the adoption of a water code and the United States will together be responsible for administering these waters as reserved rights while they are used within the trust lands of the Tribe and within the canal system of the existing Uintah Irrigation Project. The State will be responsible for assuring that the full quantity of water will be diverted from the rivers and streams and made available

to the Tribe. In the event the Tribe elects to move any of its water off the Reservation, said waters will be administered by the State as a State of Utah water right. But the Compact provides that in no event can the water rights of the Tribe be abandoned or forfeited. Furthermore, the State is subject to an obligation to affirmatively preserve the allocation of tribal water secured in the Compact. Much of land base upon which the water rights are predicated includes Tribal trust lands, allotted trust lands, and formerly allotted trust lands now owned by non-Indians. A significant portion of the Tribe's allocation of Ute Indian Compact water is currently being used, and for that portion not subject to current use, the Tribe intends to develop limited agricultural and, over time, substantial municipal and industrial uses. A copy of a draft of the proposed Compact (without the extensive land and water rights tabulations) is attached as Exhibit C.

V. OUTLINE OF TITLE IV—THE FINANCIAL SETTLEMENT OF THE UTE TRIBE'S CUP CLAIMS

Title IV of the legislation sets out the terms of the financial settlement of the Ute Tribe's claims as they relate to the Central Utah Project. Title IV also provides for a ratification of the Ute Indian Compact.

As described below, the Ute Tribe has retained the services of Alan Kleinman, former Chief Economist of the United States Department of Interior, Bureau of Reclamation for purposes of quantifying the Tribe's claims arising out of the Deferral Agreement of 1965. This analysis demonstrates that if all of the benefits contemplated by the Deferral Agreement of 1965 had been constructed and were available today to the Tribe, the Tribe could anticipate an annual economic return in excess of \$17,000,000 per year. Title IV sets forth substitute economic benefits to the Tribe which meet that \$17,000,000 commitment.

1. Calculation of Ute Indian Tribe Claims

Utilizing information which the United States Bureau of Reclamation had developed in 1984 relating to costs and benefits of a number of projects relating to the Ute Indian Tribe, the Tribe has developed the following analyses. It is estimated that the cost of constructing in 1990 values the Upalco Unit, the Uintah Unit and the Ute Indian Unit of the Central Utah Project would equal approximately \$506,000,000. In contrast, the proposal described below represents a present value of approximately \$220,000,000, or 43% of the United States Bureau of Reclamation construction costs estimate.

The Ute Indian Tribe has identified three areas of benefits to the Ute Indian Tribe envisioned under the Deferral Agreement of 1965 and the Congressional authorizations of 1956 and 1968 found in the Colorado River Storage Project Act. The areas described include: (1) benefits under the Uintah Unit; (2) benefits to the Group 5 lands which under the Deferral Agreement were to be developed under the ultimate phase of the Central Utah Project; and (3) benefits arising from hunting and fishing and wildlife mitigation commitments.

(a) The Uintah Unit

Under the June, 1983 Bureau of Reclamation Report on the Uintah Unit, the Bureau estimates annual Indian irrigation benefits at \$2,281,004 (p. 22). The Bureau also estimates that the total fish and wildlife enhancement is \$2,779,000 (p. 24) and that the annual recreation benefits are \$498,000 (p. 22). Those numbers should be reduced to reflect that the Uintah Unit overall is designed to provide approximately two-thirds of its benefits to the Ute Indian Tribe and its members, with the result that the annual fish and wildlife and recreation benefits when adjusted for Indian benefits equals \$2,185,000. When that \$2,185,000 figure is added to the \$2,281,000 figure for irrigation benefits and then indexed to present 1990 values a total benefit package for the Uintah Unit is calculated at \$5,736,600 per year.

(b) Group 5 Lands Under the Initial and Ultimate Phase of the Central Utah Project

Under the Deferral Agreement, the United States committed to the Ute Indian Tribe to develop all Group 5 lands (both those deferred and those not deferred) under the Central Utah Project. To determine the benefits for the Group 5 lands, the Ute Tribe used what we believe are the most concrete and representative numbers for irrigation and other benefits for lands located outside of the Uintah Unit—namely, those benefits developed for the Upalco Unit lands. Upalco Unit values represent average Central Utah Project values, keeping in mind that the Bonneville Unit values are somewhat higher and the Uintah Unit values are somewhat lower.

Using the 1981 Bureau of Reclamation Upalco Unit Report, there exist direct agricultural benefits (net farm income) of \$169.00 per acre and indirect benefits (indi-

rect benefits are typically measured by the increased economic activity in the geographic area) of \$34.00 per acre. In addition the Tribe has added Indian labor benefits which would be recognized under a Group 5 project but not necessarily under the Upalco Unit of \$29.23 an acre. This combined total creates annual benefits of \$232.23 per acre. When that figure is multiplied times the number of Group 5 lands not included in the Uintah Unit (which is a total of 21,300 acres), the annual benefits under the Upalco 1979 cost numbers equals \$4,946,499. When that figure is indexed up to current 1990 values the Group 5 benefits total \$8,331,000 per year.

(c) Fish, Wildlife and Recreation Benefits Independent of the Uintah Unit

The Bureau of Reclamation in its 1984 Briefing Paper estimated the fish, wildlife and recreation benefits independent of the Uintah Unit at \$32,000,000. A principal amount of this expenditure is for the Lower Stillwater Recreation Project which is a part of the Bonneville Unit. The Ute Indian Tribe estimates that the annualized benefits from these fish and wildlife and recreation projects (which were specifically provided for in the Deferral Agreement) equal \$805,800 per year.

Not included in this list of benefits are other benefits such as the documentation that Leland Bench, which the Regional Solicitor of the Department of the Interior has found is encompassed within the initial phase of the Bonneville Unit, which would, if built, generate revenues in the neighborhood of \$3,344,000 to \$3,603,000 per year. We have not included the Leland Bench benefits because we believe that the Deferral Agreement as well as the congressional actions in 1968 make it obvious that the Uintah Unit, as well as the ultimate phase components (primarily the Ute Indian Unit) were intended by the United States to form the basis of the benefits for the Ute Indian Tribe. Nevertheless, the Leland Bench calculation remains as a background.

Further, the release by the Ute Indian Tribe of its claims to the Central Utah Project components means that substantial salinity benefits will accrue to the United States in the national interest in light of the fact that 100,000 acre feet of water will be effectively freed up for passage in the Colorado River. We estimate that this dilution benefit to the salinity in the Colorado River amounts to approximately \$2,000,000 per year. In effect, that \$2,000,000 becomes a contribution over the past 25 years from the Ute Tribe to the United States and to the adjoining upper basin and lower basin states.

(d) Power Revenue Claims

Finally, the same decision by the Tribe to forego development of up to 100,000 acre feet depletion of Indian water permits the Secretary to continue to utilize that water for power revenue purposes. Under the authority of the Boulder Project Act and the Reclamation Project Act, the Secretary of the Interior has in the past and continues in the present to generate electric power from flow down the Colorado River and to sell such power to eligible purchasers. The Ute Indian Tribe has a claim to the fair market value (and not simply a share of the lower than fair market revenues received) of the power revenues generated from water to which the Ute Indian Tribe's *Winter's Doctrine* rights attach, which has over the years flowed into the Colorado River and has been used by the Secretary to generate power revenues for the benefit of the Department of the Interior.

We estimate that the dollars generated through the power facilities at Grand Canyon, Hoover and Davis equal 1035 kwh per acre foot. Further, we project that the average net revenue received by the Secretary for such power from the period 1965 to the present is 11 mills. As a result, 100,000 acre feet of water flowing through the Colorado River power plants have over the past 25 years generated approximately \$28,000,000 to the United States. Our economist estimates that the annual yield from the power revenue amount would equal \$2,277,000 a year.

(e) Summary of Ute Tribe Claims

When these annualized power revenue benefits from the period 1965-90 are added to the benefits contemplated under the Deferral Agreement (see pp. 9-11) a total Ute Tribe claim of \$17,150,400 a year is realized. We believe that these benefit amounts quantify what is a fair and equitable settlement which should be paid by the United States to the Ute Indian Tribe in lieu of the commitments made by the United States in the Deferral Agreement and in the Colorado River Storage Project Act.

2. Summary of the Ute Tribal Benefits Found in Title IV

Title IV authorizes a series of benefits to the Ute Indian Tribe in lieu of the project benefits contemplated under the 1965 Deferral Agreement. First, there is established a Development Fund in the amount of \$125,000,000 to be paid to the Ute

Tribe by the United States over a course of three years. That development fund will become the critical component of the Tribe's effort to secure economic self-sufficiency in the future. The income from and under special circumstances the principal from the Development Fund will be available only for approved economic development projects.

In lieu of physically leasing new non-deferred Indian water into the now full transbasin facilities of the CUP, the Tribe seeks an income flow from the use of Bonneville Unit water. Title IV of the legislation contemplates that 26 of the capital repayment monies attributable to 35,500 acre feet of Bonneville Unit water paid by water users to the United States annually will be contributed to the Ute Tribe during the 50-year period of repayment. In the 51st year, this yearly payment to the Ute Tribe will be undertaken directly by those water users who will pay 7% of the then fair market value of 35,500 acre feet of water in the Bonneville Unit.

In order to assist the Tribe in enhancing economic opportunities on the Reservation, a series of miscellaneous undertakings are provided in Title IV of the Act, including repair of the Cedarview Reservoir, improvement of Reservation streams which may have been affected by the Central Utah Project, rehabilitation of potentially serious contamination at the Bottle Hollow Reservoir built by the United States as a result of the Deferral Agreement of 1965, maintenance of minimum stream flows in Rock Creek to insure that the Ute Indian Tribe's sacrifice to the CUP will not extend to eliminating that river as an important fishery to the Tribe, the transfer of 350 acres of land to the Ute Tribe by the United States in recognition of the non-construction of Lower Stillwater (yet another authorized but not built component of the Central Utah Project), and monies to permit the Tribe to undertake for member and non-member uses a potentially highly profitable program of hunting and fishing on the Reservation. Moreover, a significant expenditure is sought to assist the Tribe to develop a finite, but high quality, farming/feedlot operation on existing Tribal lands. The monies, approximately \$45,000,000, would be utilized to group up existing Tribal lands with limited adjacent non-Indian-owned lands, and then to upgrade the existing water delivery systems to the lands provided by the antiquated Uintah Irrigation Project and also to provide modern on-farm water to assure a high-quality agricultural/feedlot operation.

Finally, the remaining provisions of Title IV deal with non-financial matters and they include, as noted above, the ratification of the Ute Indian Compact and authorization for a waiver of all historic claims by the Ute Tribe upon the receipt of the monies appropriated under Title IV.

VI. CONCLUSION

In the 1880s and 1890s, the United States abandoned the Ute Indians. History shows that the Ute bands came close to extinction. I am here today, one hundred years later, to seek federal help in settling the Ute Tribe's long-standing water claims in order to assure the survival of the Tribe and its members.

EXHIBIT A

HISTORY OF THE UTE INDIAN TRIBE'S CONTRIBUTION TO THE CENTRAL UTAH PROJECT

For 40 years the United States has Planned, Authorized, and Financed the development of Upper Basin Colorado River Waters in Utah in a Manner to Assure the Ute Indian Tribe of an Economic Use of its Water Resources.

(i) *The origins of the Central Utah Project*

The Central Utah Project (initial phase) is one of several participating projects authorized by the Colorado River Storage Project Act (Act of April 11, 1956, 70 Stat. 105). The earliest description of the project (which was designed to utilize Utah's apportioned share of Upper Basin Colorado River water to serve the growing population of the Salt Lake City metropolitan area and the other urban centers located south of Salt Lake City along the Wasatch Front), acknowledged the need to "borrow" Indian water flowing into the Uintah and Ouray Indian Reservation.

The Central Utah Project (initial phase) is located in the eastern Bonneville Basin in Central Utah and in the Uinta Basin, part of the Colorado River Basin in northeastern Utah. The plan would include construction of the Strawberry Aqueduct along the south slope of the Uinta Mountains for intercepting the *Uinta Basin streams as far east as Rock Creek*, and enlargement of the Strawberry Reservoir by construction of the Soldier Creek Dam . . . (emphasis supplied).

See S. Rep. No. 128, 84th Cong., 1st Sess., 7 (1955); H.R. Rep. No. 1087, 84th Cong., 1st Sess. 9 (1955).

Rock Creek is one of the primary Colorado River tributaries supplying water to the Ute Indian Reservation. Congress understood that a bargain would have to be struck with the Ute Indian Tribe. In exchange for supplying critically needed water to Salt Lake City and its environs, the Ute Tribe would receive, over time, its full quota of Colorado River water as well as facilities to utilize that water for the economic welfare of the Tribe.

In the introduction to the C.U.P. 1951 Project Planning Report, the Bureau of Reclamation Regional Director confirmed in a cover letter to the Commissioner of the Bureau of Reclamation that while the C.U.P. was principally designed to provide water for the populous Bonneville Basin by taking water from the less populated Uinta Basin, Indian lands affected by the de-watering of the Uinta Basin would have to receive assistance. That letter provided:

Water exchanges in the initial phase of the project would involve presently irrigated lands in the Uinta Basin, including lands in the Uinta Indian Irrigation Project. Indian participation should be in accordance with laws applicable to the development of irrigation projects on Indian reservations, including provisions of the Act of July 1, 1882 . . . which act should be extended by appropriate legislation. *The Indian lands should receive assistance from the Upper Colorado River Account in the same manner and to the same degree as other lands in participating projects.* (Emphasis supplied.)

The Bureau of Indian Affairs provided direct input in the 1951 Report, and explained throughout the report that protection of Ute Indian interests was a central issue in the development of the concepts for the initial phase.

The Ute Indians have protested against confiscation of their water rights as they feared that a new and arbitrary determination would be made of the areas entitled to a water supply within the Uinta Basin.

It was further stated by the Reclamation Bureau officials that their plans contemplated a water supply in the Uinta Basin for every acre now irrigated or irrigable under their land classification standards. Their proposals provided for taking only that amount of water from the Uinta Basin surplus to the needs of every irrigable acre within the Basin. *They further stated that the taking of water from Duchesne River and Rock Creek for diversion to the enlarged Strawberry Reservoir and to the Bonneville Basin would result in the construction of regulating storage reservoirs which would supply the Uintah Indian Irrigation Project with a dependable late season flow . . .* (Emphasis supplied.)

However, as the analysis demonstrates, Congress thereafter rejected the plan to build the "regulating storage reservoirs" for the Ute Reservation as part of the initial phase of the Central Utah Project. Congress' change of plans in the Upper Colorado River Basin came after the Ute Tribe had committed its waters to the Wasatch Front. Indeed as early as 1950 the BIA, the Bureau of Reclamation, and the Ute Indians had agreed that in order for the initial phase to proceed satisfactorily, both land surveys, water requirements, and project works would have to be identified jointly by the parties, and cost estimates made.

It was the unanimous agreement among the conferees, including the representatives of the Ute Indians of the Uintah and Ouray Reservation that a basis had been laid for a reconciliation of the differences of opinion and that it would be possible to work out a solution of the initial phase of the Central Utah Project which may be acceptable to all parties.

Id.

The next BIA memorandum relating to the 1951 initial phase project planning report was dated October 26, 1950, and took the form of a letter from the Area Director of the Bureau of Indian Affairs to the Regional Director of the Bureau of Reclamation. The letter again emphasizes that the dewatering of Uinta Basin streams for the initial phase was to be tied into the development of Uinta Basin water storage facilities:

The water supply in question is comprised of diversions from the Duchesne River system, the same source from which these Indians for many years past have obtained their supply and which has been legally attached with first priorities to their lands by Federal and State Decrees.

In accordance with the preliminary designs of the Bureau of Reclamation, the main aqueduct of the Central Utah Project would intercept each and every one of the Uinta Basin streams from which the Uintah Project obtains its water

supply at points along the southern slopes of the Uintah Range at elevations sufficiently high to conduct the natural flow of these streams by gravity through a series of interconnected tunnels into the Bonneville Basin. . . . *The "Initial Phase" of the project, however, would consist only of the interception of the Duchesne River and its upper tributaries and the construction of certain reservoirs which would be designed for flood flow regulation and to provide substituted storage water for use on the Uintah Project to take the place of that diverted to the Bonneville Basin.* (Emphasis supplied)

This review of the February, 1951 planning report, submitted to Congress as a basis for the 1956 Congressional authorization for the initial phase of the Central Utah Project, reveals that a critical initial phase concern was the transfer of Indian water to the Bonneville Basin for use by Salt Lake City. Indeed, in 1951, five years before Congress authorized the initial phase, the Bureau of Reclamation and the Bureau of Indian Affairs had already begun undertaking soil samples of potentially irrigable Ute Indian lands and making cost estimates of water projects designed to assure that the Ute Indians would benefit, and not suffer, from the initial phase transfer of the surplus water out of the Uinta Basin.

Shortly after the enactment of the Colorado River Storage Act of 1956, the Department of the Interior began the process of creating a specific plan for the initial phase. As part of that process, the Department helped establish the Duchesne River Study Committee made up largely of Utah citizens and water users which was organized to make an assessment of the water resource needs and impacts of the initial phase on the Duchesne River. In April of 1962, the Committee reported that:

It is apparent from studies made jointly with Indian representatives that an agreement between the Central Utah Project and the Ute Indians limiting the total acreage of Indian-owned and Indian water right lands demanding a prior direct water flow right will be necessary for successful operation of both the Bonneville and Duchesne segments of the initial phase.

Duchesne River Land and Water Resource Review, Bonneville Unit, Central Utah Project, initial phase, Duchesne River Study Committee, April, 1962, p. 5.

Then in 1964, the Bureau of Reclamation issued the Bonneville Unit Definite Plan Report. Two themes emerge from the Definite Plan Report as they relate to the impact of the initial phase on the water resources of the Ute Indian Tribe. First, that with respect to Indian lands being served by the Uintah Irrigation Project which are within the Duchesne River drainage, the initial phase will not provide additional waters. Definite Plan Report, p. 10. Second, that while Ute Tribe Uintah Irrigation Project lands would not be served by the initial phase, establishment of an optimum initial phase component required that the Ute Indians relinquish a portion of their water rights along the Duchesne River and Rock Creek. The Ute waters were required in order to make available sufficient Uinta Basin water supplies to permit the C.U.P. initial phase to proceed on a favorable cost/benefit ratio. The Definite Plan Report provides:

The Committee found that there are about 15,500 acres of additional irrigable Indian land within the Duchesne River area that could be irrigated but assumed that irrigation of these lands will be deferred pending development of the ultimate phase of the Central Utah Project.

Definite Plan Report, pp. 72-73. Thus, the 1964 Definite Plan Report confirmed that, on one hand the initial phase would not provide substantial water supplies to Ute Indian lands while, on the other hand, a specific condition of the initial phase would be that the Ute Indians release their claim to a substantial water supply.

(ii) *The Deferral Agreement of 1965 and Congress' Express Commitments to the Ute Indian Tribe in 1968*

The next step in the confirmation of the full extent of the involvement of Ute lands and water resources in the C.U.P. initial phase came one year after the Definite Plan Report, when in September of 1965, the Bureau of Reclamation, the Central Utah Water Conservancy District and the Ute Indian Tribe signed the 1965 Deferral Agreement. The Agreement of September 25, 1965 acknowledged that under the initial phase of the C.U.P., water required to supply approximately 15,242 acres of Reservation lands would be diverted to the Bonneville Basin by having the Ute Tribe agree not to develop such water until the ultimate phase of the Central Utah Project (then conceived primarily as the Ute Indian Unit) was constructed to provide substitute water for Ute Indian development. Further, the Agreement provided that storage facilities would be constructed on the Uinta Lake Fork and Whiterocks River for the benefit of the Ute Tribe, and that facilities would also be provided under the Colorado River Storage Act to mitigate for losses to fish, wildlife and recreation caused by the construction and/or operation of the CUP. Moreover, while

the State of Utah was not a formal signatory to the Deferral Agreement, the Central Utah Conservancy District which provides water to thousands of Utah citizens was a signatory, and the District with the consent of the State of Utah endorsed a commitment to quantify the Ute's water rights through negotiation rather than through litigation.

The 1965 Agreement thus carries forth the plan of the Bureau of Reclamation to implement the Bonneville Unit as a principal component for the initial phase of the CUP, and importantly set the stage for Congress' authorization in 1968 of the Uintah Unit and its directive expediting planning for the Ute Indian Unit. Thus, by 1965 the basic water resources commitments made to the Ute Indian Tribe were in place as a pivotal part of Congress' plan to assist Utah in developing its quota of Colorado River water. Then in 1968, the Utah State Department of Natural Resources, Division of Water Resources, drawing heavily on Ute Indian Unit reconnaissance investigations and the earlier ultimate phase studies, published a *Report on the Ute Indian Unit of the Central Utah Project*. According to the State, the report was "designed to outline a long range plan for fully utilizing the water resources available in the Uinta Basin including most of Utah's share of Colorado River water." This plan would have developed about 740,000 acre-feet of water annually. Nearly two-thirds of the water supply of the State plan was intended for municipal and industrial uses, including about 136,000 acre-feet for the Uinta Basin and 315,000 acre-feet for the Bonneville Basin. The balance would be used for irrigation of Indian and non-Indian lands, primarily in the Uinta Basin. The State recognized the problem of increasing population and expanding industrial growth, the need for an overall plan for the use of its water resources, and the necessity for scheduling construction of works to supply water at the time and place of need.

The State considered the Ute Indian Unit (the ultimate phase of the Central Project) to be a key feature of the overall State water system and proposed that detailed planning, authorization, and construction be accomplished expeditiously. This State report became the primary basis for the authorization by Congress in 1968 of the Ute Indian Unit feasibility study which was inserted in the Colorado River Storage Project Act legislation of 1968. See 43 U.S.C. § 620.

In enacting the Colorado River Storage Project Act amendments in 1968, 43 U.S.C. § 620, Congress expanded the initial authorization for the Central Utah Project and provided the Ute Tribe with two major water resources projects. Congress first established the Uintah Unit side by side with the Upalco Unit as a major addition to the initial phase of the Central Utah Project, (See, 43 U.S.C. § 620). In addition, Congress ordered the Secretary of Interior to give priority to completion of planning reports on a number of projects, including the Ute Indian Unit of the Central Utah Project, (See, 43 U.S.C. § 620a). In these two amendments, Congress was specifically concerned with implementing the commitments made to the Ute Indian Tribe by the United States in the Deferral Agreement of 1965. Congress provided:

That the planning report for the Ute Indian Unit of the Central Utah participating project shall be completed on or before December 31, 1974, *to enable the United States of America to meet the commitments heretofore made to the Ute Indian Tribe of the Uintah and Ouray Indian Reservation under the agreement dated September 20, 1965.* (emphasis supplied)

43 U.S.C. § 620a.

The legislative history of the 1968 provisions in the Colorado River Basin Project Act (43 U.S.C. § 620a), shows that Congress was fully aware of the timing and scope of the commitment to the Ute Indian Tribe formally embodied in the 1965 Deferral Agreement. Senator Moss of Utah, in particular, emphasized the critical importance of developing, on an expedited schedule, one or more Indian water resource projects:

§ 501(a) contains language which would enable the State of Utah and the Secretary of Interior to fulfill their commitments to the Ute Indian Tribe. The Ute Indian Tribe of the Uintah and Ouray Indian Reservation has agreed to defer the development of a portion of their acreage until the Ute Indian Unit of the Central Utah Project is constructed, *if this is done within a reasonable time.* The water which might be used on these lands will now be available for use in the Bonneville Unit of the Central Utah Project. *By reason of this agreement, it is necessary for the Ute Indian Unit to be given a priority in planning, so that the report on this Unit be completed by 1972. My bill so provides . . .* (Emphasis supplied)

Senate Hearings on S. 10004, *et seq.*, before the Subcommittee on Water and Power Resources of the Senate Committee on Interior and Insular Affairs; 9th Cong. 1st Sess. 106 (1967).

Senator Moss' reference to "reasonable time" emphasizes Congress' understanding that while the Ute Indian Tribe was willing to defer for a limited period of time

development of its water resources, the United States was committed to continuing the work of developing one or more Indian projects (i.e., the Uintah Unit, the Ute Indian Unit, or some modification thereof) in order to assure the Ute Indians that the 1965 commitments would be honored. Significantly, Congress followed up the 1968 amendments with an authorization in September of 1976 to construct the Uintah Unit. See Authorization Act of September 30, 1976, 90 Stat. 1324. However in the years since 1976, Congress has reduced its commitments to Upper Basin water projects, and at the same time the Ute Tribe has explored new ways in which its water resources could be economically utilized so as to benefit and not burden present and future members of the Tribe.

This brief review confirms that for 40 years a consistent and uninterrupted policy and commitment has existed on the part of the United States Congress, federal officials, and the State of Utah, to compensate the Ute Indian Tribe for its essential contribution to Congress' plan to divert, store, and utilize the valuable Colorado River waters allocated for consumption in Utah. This long standing federal understanding and commitment shows that while Congress intended to permit the Upper Basin Colorado River states like Utah to utilize Indian water (where necessary to economically develop Colorado River waters), Congress did not intend the State plans for the Colorado River to permanently deprive the Ute Tribe of its water and of the right to put that water to economic use.

Further this history shows that Congress fully intended, through the special Deferral Agreement of 1965 as well as specific Congressional commitments, to assist the Tribe to utilize its Colorado River resources for the economic benefit of the Tribe and its members. The settlement proposed by the Ute Tribe in 1990 implements Congress' 40 year policy to preserve Ute Indian water for the economic benefit of the Ute Tribe and its members, honors the federal commitments of the 1950s (the CUP initial planning phase), the federal commitment of 1965 (the Deferral Agreement) the federal commitment of 1968 (the Uintah and Ute Indian Unit authorizations) and the federal commitment of 1976 (the Uintah Unit authorization).

EXHIBIT B

Conformed Copy—Contract No. 14-06-W-194

AGREEMENT

THIS AGREEMENT made and entered into this 20th day of September, 1965, pursuant to the Act of June 17, 1902, and acts amendatory thereof and supplementary thereto, and particularly the Act of April 11, 1956 (70 Stat. 105), by and between the United States of America acting through the Bureau of Reclamation and Bureau of Indian Affairs, Department of Interior, the Ute Indian Tribe of the Uintah and Ouray Indian Reservation, organized pursuant to the provisions of the Indian Reorganization Act of June 18, 1934 (48 Stat. 984) as amended, and the Central Utah Water Conservancy District, a public corporation.

WITNESSETH

WHEREAS, the Central Utah project is planned for development and construction in two phases, initial and ultimate, and

WHEREAS, the project includes three major units, Bonneville, Upalco and Uintah, all or a part of which involve the Uintah and Ouray Indian Reservation within the Uintah Basin, two of which, Bonneville and Upalco, are included in the initial phase and the Uintah in the ultimate phase, and

WHEREAS, there are approximately 36,450 acres of land served or to be served from the Duchesne River, Bonneville Unit; 33,450 acres of land served or to be served from the Lakefork River, Upalco Unit; and 39,648 acres of land served or to be served from the Uintah River, Uintah Unit, either owned by Indians or non-Indians, but all of which are supplied or are to be supplied with water through original Indian water rights, and

WHEREAS, the Indian water right land has been scheduled in five separate groups for identification purposes, described as group (1) for which a Federal Decree has been entered, 25,070 acres of which are served or to be served from the Lakefork River and 34,152 acres from the Uintah River; Group (2) consisting of 18,613 acres designated by the Secretary of the Interior as a part of the Uintah Indian Irrigation Project, and for which a certificate has been issued by the State Engineer of Utah and served from the Duchesne River; group (3) consisting of 1,115 acres designated by the Secretary of the Interior as a part of the Uintah Indian Irrigation

Project and served or to be served from the Duchesne River but for which no certificate has been issued by the State Engineer of the State of Utah; group (4) consisting of 1,480 acres of original Indian allotted land served or to be served from the Duchesne River; and group (5) consisting of 29,118 acres of practicably irrigable land presently not under irrigation, 15,242 acres of which are to be served from the Duchesne River, 8,380 acres to be served from the Lakefork River and 5,496 acres to be served from the Uintah River, and

WHEREAS, development of all of group (5) land is proposed to be deferred to the ultimate phase of the Central Utah project, and

WHEREAS, the United States, acting through the Bureau of Reclamation, intends to construct the Bonneville unit of the Central Utah project as a part of the initial phase, and

WHEREAS, there are approximately 36,450 acres of land on the Duchesne River, either owned by Indians or non-Indians, but all of which are supplied or are to be supplied with water through original Indian water rights, and

WHEREAS, part of the Bonneville unit water supply will be used to irrigate approximately 10,000 acres of Indian water right lands under the existing Duchesne Feeder Canal and Midview Reservoir in order to free Lakefork River water for use upstream on lands in the Moon Lake Project, and

WHEREAS, the Ute Indian Reservation was established on the 3rd day of October 1861, embracing all of the three Unit Areas as described in the third whereas clause hereof, with the reservation of then perfected water rights sufficient to satisfy the future as well as the present need of the Indian Reservation with enough water to irrigate all the practicably irrigable acreage of the Reservation, and

WHEREAS, approximately 15,242 acres of practicably irrigable land within the Uintah and Ouray Indian Reservation of said group (5) lands and within said Bonneville Unit Area are presently not under irrigation, and

WHEREAS, the Ute Indian Tribe of the Uintah and Ouray Indian Reservation, for the considerations and subject to the conditions hereinafter stated, is agreeable to defer the use of water on said 15,242 acres of land for development under the ultimate phase of the Central Utah project;

NOW, THEREFORE, in consideration of the mutual and dependent covenants and conditions herein contained, it is agreed by the parties hereto as follows:

1. That construction of the Bonneville unit of the Central Utah project, initial phase, as authorized by the Congress of the United States, and as planned by the Bureau of Reclamation, may proceed without objection, interference or claim adverse to the water requirements for such unit, as set out in the Duchesne River Area Study Committee, Duchesne River Land and Water Resource Review dated April 1962.

2. That use of water on 21,205 acres of Indian water right land in the Uintah Basin portion of the Bonneville unit, with the priority date of October 3, 1861, described as groups (2), (3), and (4) in said report dated April 1962, is recognized and confirmed.

3. That use of water for the 15,242 acres of Indian owned land, described as group (5) in said Study Committee Report dated April 1962, may be deferred at this time upon the condition that said lands be included in the ultimate phase of the Central Utah project, as hereinafter provided.

4. That deferment of the development of said group (5) lands for irrigation purposes is granted by said Ute Indian Tribe conditioned upon the full and complete recognition of the water rights of said tribe, with a priority date of 1861 in groups (1), (2), (3), (4) and (5) as described in the book of claims filed with the State Engineer, State of Utah, by the Ute Indian Tribe, without resort to litigation.

5. It is further understood and agreed that said deferment shall neither constitute an abandonment by said tribe, nor be construed as consent to any further deferment of the right to the use of water for the 15,242 acres referred to in paragraph 3 above. If the ultimate phase of the Central Utah project is not completed sufficiently to supply said Indian water rights by the 1st day of January, 2005, equitable adjustment will be made in accordance with said reserved and perfected water rights of the tribe to permit the immediate Indian use of the water so reserved. It is agreed that the first day of January, 2005, shall be mutually considered as the maximum date of deferment and that all phases of the Central Utah project will in good faith be diligently pursued to satisfy all Indian water rights at the earliest possible date. Under no circumstances shall the fixing of such maximum deferment date be construed as an agreement or license to interpose the satisfaction of inferior water rights delaying the satisfaction of said deferred Indian rights, except where the orderly development and construction of the Central Utah project directly requires

such deferment of said Indian rights to be supplied from the ultimate phase of said Central Utah project.

6. No Indian water rights, referred to herein, shall restrict the owner thereof to agricultural uses but such rights may be used for purposes other than agricultural, including but not limited to industrial, municipal and recreational uses.

7. That the use of water from the Duchesne River and its tributaries in the Bon-neville unit area, unless otherwise agreed in writing, shall be subject (1) to a river headgate diversion allowance of 4 acre-feet per acre annually and (2) shall be delivered generally in accordance with an ideal demand curve for irrigation purposes, except for the purposes described in paragraph 6 hereof.

8. That the point of diversion from the Duchesne River of the Wissiup Leland and Ouray School canals be moved upstream by the Uintah Indian Irrigation Project to the point of diversion of the Duchesne Feeder Canal.

9. That facilities will be provided under the Colorado River Storage Act to miti-gate for losses to fish, wildlife and recreation upon the lands of the Ute Indian Tribe of the Uintah and Ouray Reservation or of its members caused by the construction and/or operation of the Central Utah project. This provision shall not be construed as any limitation upon the acceptance or use of any benefits as may become avail-able under enhancement provisions of said act.

10. That development of the Uintah Unit of the ultimate phase of the Central Utah project to provide storage of the runoff waters of the Uintah River and its tributaries, be programmed for early authorization and construction:

11. That Bottle Hollow Reservoir be investigated at an early date with a view of including the same as a storage facility of the Uintah Unit.

12. That the exchange of Duchesne River water under the existing Duchesne Feeder Canal and Midview Reservoir for Lakefork River water in order to free La-kefork River water for use upstream on lands in the Moon Luke Project shall not impair the 1861 priority of the Ute Indian Tribe or its members either in flow or storage right, and such exchange shall not be construed as an exchange of water rights.

13. Nothing herein contained shall be construed as preventing the construction and use of facilities by the Ute Indian Tribe, the Uintah Indian Irrigation Project, or the United States for storage and use of water upon all Uintah Indian Irrigation Project lands not supplied from facilities constructed under the Central Utah project.

14. This agreement is subject to the approval of the Secretary of the Interior or his duly authorized representative.

N.B. BENNETT, JR.,
*Acting Commissioner, Bureau of Re-
clamation.*

JOHN O. CROW,
*Deputy Commissioner, Bureau of
Indian Affairs.*

FRANCIS WYASKET,
Chairman, Ute Indian Tribe.

STERLING D. JONES,
*President, Central Utah Water Con-
servancy District.*

EXHIBIT C

UTE INDIAN WATER COMPACT

Note: [] = deletions; *Italic* = additions.

The State of Utah, the Ute Indian Tribe of the Uintah and Ouray Reservation, Utah, and the United States of America, acting through their respective representa-tives agree to a Ute Indian Water Compact as follows:

ARTICLE I—PURPOSE OF COMPACT

The purpose of this Compact is to remove the causes of present and future contro-versy over the quantification, distribution, and use of all waters claimed by or through the Ute Indian Tribe.

ARTICLE II—LEGAL BASIS FOR COMPACT

This Compact is made in accordance with the Constitution and Laws of the United States, the State of Utah, and the Ute Indian Tribe.

ARTICLE III—WATER

There is hereby apportioned, confirmed, and recognized from the waters apportioned to the State of Utah from the Colorado River System to the United States of America in perpetuity, in trust, as *Winters Doctrine water rights* for the Ute Indian Tribe and others, and depletion of water in the amount of 248,943 acre-feet per annum, and the related gross diversion requirement of 471,035 acre-feet per annum, from all sources in accordance with and as more fully set out in the "Tabulation of Ute Indian Water Rights" attached hereto and on file with the Utah State Engineer. The priority date of October 3, 1861, is recognized for land groups 1 through 5, except for water supplied from storage in the Central Utah Project, and the priority date of January 5, 1882, is recognized for land groups 6 and 7, unless indicated otherwise in the Tabulation. Tables 1, 2, and 3 of the Tabulation list the total irrigable acreage, maximum allowable depletions and diversion requirements, respectively, for each of the land groups by stream. No water rights held in trust can be transferred from the lands listed in said groups without approval of the Secretary of the Interior. All water delivered to groups 1 and 5 lands from storage under the Central Utah Project shall be assigned the priority date of the [Water and Power Resources Service] *Bureau of Reclamation* filing to accomplish the equitable allocation of water to all subscribers of the Project.

In addition to the water allocated under the previous paragraph, there is hereby apportioned, confirmed, and recognized to the United States of America in perpetuity, in trust, for the Ute Indian Tribe the depletion of 10,000 acre-feet of water annually having a priority date of October 3, 1861, for municipal and industrial purposes, which shall be diverted from the Green River. To the extent that the Tribe or its members use [reserved water for domestic, municipal, industrial, or related uses] *water, other than for irrigation purposes*, the quantity so used shall be included within said 10,000 acre-feet unless a transfer of water from land listed in the Tabulation is properly made.

No water allocated pursuant to this Compact shall be subject to loss or forfeiture under the laws of the State of Utah or otherwise. Further, the water allocated herein shall not be restricted to any particular use, but may be used for any purpose selected by the Tribe in accordance with the procedures provided for in this agreement.

The quantities of water apportioned hereby include all water rights of every nature and description derived from the reserved water rights doctrine, from all sources of water, both surface and underground, and includes all types and kinds of uses, whether municipal, industrial, recreational, in-stream uses, sale, lease, or any other use whatsoever, and encompasses all claims asserted by or through the Ute Indian Tribe, and all persons and entities other than the Tribe whose claims or rights are derived, directly or indirectly, from the reserved water rights of the Tribe. Thus, any water rights adjudicated or otherwise established in the future on behalf of any person or entity and based upon a claim, directly or indirectly, through any reserved water rights of the Tribe shall be included within and as a part of the water quantified by this Compact. Any state water rights acquired by the Tribe for land to which a reserved right is recognized herein shall be forfeited.

Included within the practicably irrigable acreages are (1) tribal lands and individual Indian allotments; (2) Uintah Indian Irrigation Project lands, which include tribal lands, allotments, and some private lands which were originally allotted lands; and (3) some few lands distributed to former tribal members terminated in accordance with the Ute Partition Act, approved August 27, 1954 (P.L. 83-671, 68 Stat. 868, 25 U.S.C. Sections 667-667aa). Nothing in this Compact shall enlarge or diminish the scope of or otherwise affect either the United States' trust responsibility or the Ute Indian Tribe's responsibility to those persons who have been designated as mixed-bloods under the Act of August 27, 1954 (68 Stat. 868). The total acreage under irrigation or susceptible to sustained production of agricultural crops by means of irrigation is recognized as 129,201 acres, reduced by 7% to 120,157 acres to reflect roads, yards, fences, rights-of-way, and other non-productive lands. All lands in the Uintah Indian Irrigation Project are designated [assessible] *assessable* or [non-assessible] *non-assessable*. The Secretary of the Interior is authorized to change the designation from one to the other.

Nothing contained herein shall be construed to preclude the United States as Trustee for the Ute Indian Tribe, the Ute Indian Tribe, or any of its members from

filing application with the Utah State Engineer for the appropriation of additional water under the laws of the State of Utah.

The diversion and depletion requirements for the water rights apportioned under this Compact are set forth in Tables 1, 2, and 3 of the Tabulation, consisting of acreage, diversion, and depletion schedules. *These requirements shall be utilized in evaluating any application undertaken pursuant to Section 73-3-3, Utah Code Annotated.* The delivery schedules set forth in Tables 4, 5, 6, and 7 of the Tabulation shall determine the distribution of the water allocated hereunder. The Utah State Engineer, in a manner consistent with the agreements and covenants contained herein, shall have general administrative supervision of all surface and ground waters apportioned to the United States in trust for the Ute Indian Tribe and others, including measurement, apportionment, and distribution thereof, to the points of diversion from the main sources. The United States and the Tribe shall have general administrative supervision of all water apportioned to the United States, including measurement, apportionment, and distribution thereof, within the canal distribution systems from the various points of river diversion.

The United States on behalf of the Tribe, or the Tribe shall comply with the provisions of Section 73-3-3, Utah Code Annotated 1953, with regard to any change in the point of diversion, place, or nature of use; except that neither the United States nor the Tribe need make application to the State Engineer for change of place of use when the new place of use is within the same canal system.

The Parties agree to use their best efforts in the expeditious planning and development of water projects for all group 5 lands, or substitute lands, including the Uintah and Upalco Units, the Leland Bench Project, or other similar projects of the Central Utah project.

This Article is not intended to relieve the responsibility of the parties involved in the Midview Exchange Agreement and the Agreement dated the 20th day of September, 1965, among the United States of America, the Ute Indian Tribe of the Uintah and Ouray Reservation, and the Central Utah Water Conservancy District. The provisions of said Agreement of September 20, 1965, shall remain binding upon the parties thereto and continue in full force and effect.

ARTICLE IV—ENFORCEMENT

For purposes of compelling compliance with the terms of this Compact, each party waives the defense of sovereign immunity as to actions brought by any other party, including any defense under the Eleventh Amendment to the United States Constitution. The United States District Court for the District of Utah is hereby granted jurisdiction to adjudicate any claim made by a party to this Compact that any other party, or its officials, are acting to impair or violate any right or privilege in this Compact. *While the parties agree that the primary responsibility for protecting and preserving the Ute Tribe's reserved water rights rests with the United States and the Tribe, the State of Utah, through the State Engineer, shall use its best efforts to see that the reserved water rights of the Ute Tribe secured in this Compact are protected from impairment; provided, however, that nothing herein shall subject the State of Utah or its officers or employees to a claim for monetary damages in its efforts to so protect tribal water rights.*

ARTICLE V—RATIFICATION AND AMENDMENT

Each party acknowledges that in order for this Compact to constitute a final and permanent settlement of tribal reserved water rights, this Compact must be ratified by the United States, the State of Utah, and the Ute Indian Tribe through referendum of the Tribe's membership. The parties shall use their best efforts to have the ratifications undertaken as expeditiously as possible. The parties hereto agree that the terms of this Compact have the force and effect of law and agree to adopt all statutes, regulations and ordinances that are, or may be, necessary to harmonize existing statutes, regulations and ordinances with this Compact, and agree that this Compact may be included within any general stream adjudication. The Secretary of the Interior is authorized to implement this Compact by appropriate regulations.

Senator BRADLEY. Thank you very much, Chairman Duncan, for your powerful statement.

Senator GARN.

Senator GARN. Thank you, Mr. Chairman.

Chairman Duncan, I am pleased that you are here today, and I certainly agree with you. Looking back at the deferral agreement—

and I was also a young man and had hair. At least you have kept your hair over the years.

[Laughter.]

Senator GARN. But I have not had that privilege.

And is an obligation of this Government. You were not a party to it; I was not a party to it. But I think you are aware the Utah delegation has defended that obligation and said that we must honor it, as you say you will. And I share your frustration, as you have heard today, because it is not only the Indian projects that have not been completed, we are talking about the irrigation projects. And there is still no water going to the Wasatch Front. So, I certainly agree with what you had to say.

But my frustration goes beyond yours to the whole project. We made obligations to everybody and we are now 18 years behind schedule in completing it. So, I just wanted you to know that I share the obligation of the Government, feel that it must be completed, and that is why in the delegation bill there is that settlement.

And I realize that you still have ongoing negotiations with the State that we cannot deal with in this bill. I was pleased to hear Dee Hansen say that he felt that you were close in those negotiations. I hope that they are completed soon on that part of it.

But I just wanted you to know that—I am sure I am speaking for the whole delegation—we do stand by that deferral agreement, and we are committed to maintaining the settlement that we have agreed to with you in this bill and do everything we can to see that it remains a part of the bill as we proceed forward and hope that it is completed before the end of this session of Congress.

Thank you, Mr. Chairman.

Senator BRADLEY. Thank you very much, Senator Garn.

Chairman Duncan, let me just get your statement clear. You do support the compromise agreement that is before the committee, the bill that is before the committee?

Mr. DUNCAN. As it is, yes, we do.

I would also like to add that through my frustrations we have met with the parties concerned behind closed doors, and we have done a lot of overtime in putting our differences aside and sitting down and looking at what is best for the people of the State. And we have done that. And I would like to say thank you to those people.

Also now that I have just a minute here, I would like to thank the congressional and Senate people that have supported us, particularly Mr. Jake Garn there. Thank you.

Senator BRADLEY. Chairman Duncan, I appreciate your coming all this way, and I think your testimony was eloquent. If this bill passes, we hope that you feel that certain promises have been kept. That is really what the portion of your bill is all about. I thank you very much for your testimony.

Mr. DUNCAN. Thank you, Mr. Chairman.

Senator BRADLEY. Our final panel consists of Clifford Barrett, Executive Director of the Colorado River Energy Distributors Association; Carolyn McNeil, Intermountain Consumer Power Association; G. Richard Judd, Utah Municipal Power Authority.

Well, here we are again.

Mr. BARRETT. Senator, in order to conserve the committee's time and to avoid duplication, we have arranged our testimony so that they might follow a certain order and build on each other. And with your permission, we would like to change somewhat the order. Let myself go first, then Mr. Judd, and then Ms. McNeil. Would that be all right?

Senator BRADLEY. Mr. Barrett, if you feel that will enlighten the committee, that would be perfectly acceptable to me.

Mr. BARRETT. It will make it easier for the committee I am sure.

**STATEMENT OF CLIFFORD BARRETT, EXECUTIVE DIRECTOR,
COLORADO RIVER ENERGY DISTRIBUTORS ASSOCIATION, SALT
LAKE CITY, UT**

Mr. BARRETT. I am here representing the Colorado River Energy Distributors Association and want to express our thanks for the subcommittee allowing us to appear here today to present that testimony. You have our written testimony. I will very, very briefly just hit the highlights of that testimony for you.

We have worked for a long time with the Utah delegation on this bill. We have limited our involvement and our comments to those sections of the legislation which directly affect the power customers. It is important that the subcommittee understand that there is no power generation included in the Central Utah Project as now planned. There are no benefits to power as a result of this legislation. There is only the obligation to pay cost.

CREDA's objectives throughout this whole process have been to ensure that the legislation (1) retains traditional funding and repayment of Federal investment as provided for in the basic CRSP legislation in 1956, (2) that it include cost sharing by the non-Federal project beneficiaries, and (3) that it have no impact on CRSP power customers other than that already assumed in the underlying CRSP legislation. The draft bill under consideration today meets those objectives.

Under the current repayment arrangements, CRSP power customers will repay to the Federal Treasury about 95 percent of the Federal Government's investment in the irrigation features. The completion of CUP irrigation features identified in this bill, as well as the allocation of water management improvement costs to irrigators, will result in a combined CRSP power rate increase of approximately 2.6 mills per kilowatt hour. This is over and above the substantial 46-percent increase in CRSP rates scheduled to go into effect October 1 of this year, which already includes 2 mills related to CUP.

In reviewing the power rate impacts and the cost sharing provisions of this bill, we have identified a number of new provisions which we think the committee should address. Sir, those are detailed our statement. I assume you will have your staff read those and take whatever action you deem required on that. So, I will just assume that you will do that.

And I will close by saying that the completion of CUP as provided in this legislation would cause a substantial increase in the cost of power. The 1956 legislation established the principle that CRSP power customers would assist in repaying the cost of irrigation de-

velopment. The power customers have consistently accepted the terms of that obligation, and we continue to do so today.

Thank you.

[The prepared statement of Mr. Barrett follows:]

PREPARED STATEMENT OF CLIFFORD I. BARRETT, EXECUTIVE DIRECTOR, COLORADO RIVER ENERGY DISTRIBUTORS ASSOCIATION, SALT LAKE CITY, UT

My name is Clifford Barrett. I am Executive Director of the Colorado River Energy Distributors' Association, otherwise known as CREDA.

CREDA's members are located in the States of Arizona, Colorado, New Mexico, Nevada, Utah, and Wyoming. They purchase almost all of the power generated by the Colorado River Storage Project in which the Central Utah Project is a participating project.

I want to express my thanks to the Subcommittee for allowing CREDA to appear here to present its views on the matter of an increase in the authorization ceiling for the Colorado River Storage Project, more commonly known as CRSP. The legislation under consideration, S. 2969, has several titles dealing with a variety of proposals other than CRSP and the Central Utah Project. However, we understand the subject matter under consideration in today's hearing is limited in scope to Titles I through IV which deal only with the ceiling increase needed to complete CRSP participating projects within the State of Utah, the major portion of which is the irrigation and drainage system of the Central Utah Project.

Instead of the Upper Basin-wide approach taken in the legislation considered by this Committee in 1988, the current legislation has been drafted by the Utah delegation to address only the Utah projects. We strongly support this direction and have worked with the Utah delegation to allow us to have input into their drafting process.

We have limited our involvement and comments to those sections of the legislation which directly involve the CRSP power customers. It is important that the subcommittee understand that there is no power generation included in the Central Utah Project as now planned. There are no benefits to power as a result of this legislation; there is only the obligation to pay the costs. CREDA's objective has been to ensure that the legislation:

1. retains traditional funding and repayment of the federal investment as provided for in the basic CRSP legislation in 1956;
2. includes cost-sharing by the non-federal project beneficiaries; and
3. has no impact on CRSP power customers other than that already assumed in the underlying CRSP legislation.

The draft bill under consideration today meets those objectives.

Under the current repayment arrangements, CRSP power customers will repay to the Federal Treasury about 95% of the federal government's investment in all irrigation features. The completion of the CUP irrigation features identified in this bill, as well as the allocation of Water Management Improvement costs to irrigators, will result in a combined CRSP power rate increase of approximately 2.6 mills/kwh. This is over and above the substantial 46% increase in CRSP rates scheduled to go into effect October 1 of this year. That increase already contains a 2 mills/kWh increase relating to CUP costs in addition to costs of the various environmental programs related to Glen Canyon Dam, of which CRSP power customers are paying 100%.

We draw the Committee's attention to the conclusions reached by the General Accounting Office in its review of the CRSP (GAO/RCED-90-2FS) about how the CRSP has successfully met Congress' financial objectives for the project. CREDA believes these findings are important for the Committee to take into account as it considers this legislation. A copy of CREDA's January 24, 1990 letter to the chairman is attached to this statement, and we request it be made a part of the hearing record. As indicated in our letter and in the GAO report:

CRSP power customers have nearly fully repaid, with interest, the original cost of the power facilities.

Power users will eventually repay over \$5 billion, in addition to interest payments—well over five times the \$974 million investment in CRSP power facilities. These additional payments are required to repay the government's investment in CRSP irrigation projects such as CUP.

CRSP power customers' wholesale rates are comparable to those of other utilities.

Some interest groups claim that CRSP power rates are extremely low and represent a major federal subsidy. Clearly, any program that repays the original power investment with interest and then also repays four more times that investment is a good deal for the taxpayers, and does not represent a subsidy to the power users.

It is also clear that the publicly-owned utilities that contract for CRSP power have, just like any investor-owned utility, several sources of power which they use to meet the customers' needs. Just like the investor-owned utility, they have some older, lower cost sources such as CRSP, and some high-priced newer sources. And like the investor-owned utility, the amount they charge the customer is a blend of these costs, except the public utility does not include a profit margin in its rates. On this basis, the CRSP contractor's customer wholesale rates, as shown in the January 24, 1990 letter, are similar to those of other utilities in the region.

In reviewing the power rate impacts and cost-sharing provisions of this bill, we have identified a number of new provisions which we think this Committee should address.

There is no requirement for non-federal cost-sharing in the Uinta Basin features authorized in Sec. 103(a)(1), (2), (3) and (4). As these are principally irrigation works they should be subject to the cost-sharing arrangements established in Sec. 104, as is the I&D system. We note that the technical corrections recently made to the House bill clarify this section to require such cost-sharing. We hope and expect the Senate will adopt those changes.

Neither Section 105(c) nor Section 111 were in the earlier drafts of legislation that CREDA had opportunity to review and comment on. Both sections affect the allocation and repayment of costs. CREDA's understanding is that the principle goal to be achieved are:

First, an appropriate allocation of costs among the project beneficiaries;

Second, an assignment to power for repayment of the cost allocated to irrigation beyond the irrigators' ability to repay; and

Third, inclusion of those costs into the CRSP power rates in a manner which assures repayment on the terms and time frame currently provided for in existing law.

CREDA has consistently accepted this obligation and will continue to do so. We urge the Committee to assure that the bill and the supporting report language both provide for these goals more plainly than is now the case.

Section 107(e) would require power to repay nearly all of the federal government's costs in irrigation water conservation measures. This represents a significant expansion of power's responsibility toward the irrigation development. The impact of this provision on CRSP power rates would not be known until the conservation measures are in place, several years from now. CREDA does not agree in principle to the concept that power should repay the costs of water conservation. We believe that those who will receive the benefits of the water conservation measures should pay their costs. The Committee should revise this section to require the irrigators to repay the costs of water conservation, especially since Sec. 107(b)(4) gives to the water user the right to use or dispose of the water saved. CREDA has accepted the responsibility of paying to deliver the water to the irrigator; we do not accept the proposition that power should then pay for the cost of reducing the need for that water so the irrigator can then dispose of it or put it to some other use. If the conservation measures taken result in lower construction costs, or otherwise reduce the irrigation costs allocated to power for repayment, we could support this section without reservation.

Title III of the bill establishes a special account to fund an ongoing program of environmental enhancement. CREDA has no objection to the funding mechanisms as now provided for in Sec. 302. We do call to the Committee's attention the fact that, as now written, this legislation provides for this fund regardless of what water development features are finally constructed.

A final significant feature of this bill is the transfer of design and construction responsibility from the Bureau of Reclamation to the Central Utah Water Conservation District. We assume this is being done in the hope that a cost-saving will result. We have no argument with that objective; however, we believe that the federal government must exercise some control or oversight of the construction program for which power will repay a majority of the costs. The reference in the bill to the Drainage and Minor Construction Act may serve to accomplish this, but CREDA would prefer that the Committee be more certain and precise in placing some controls on the District's expenditure of federal funds.

We will be pleased to work with the Committee and its staff as you consider this important legislation.

COLORADO RIVER ENERGY DISTRIBUTORS ASSOCIATION,
January 24, 1990.

Hon BILL BRADLEY,
Chairman, Senate Energy and Natural Resources Subcommittee on Water and Power,
Washington, DC.

Dear Mr. Chairman: You are undoubtedly aware that the General Accounting Office has reviewed the status of the Colorado River Storage Project (GAO Report No. GAO/RCED-90-2FS). CREDA, whose members purchase the majority of power produced by CRSP, is pleased with the results of the GAO Report.

The Report confirms what CREDA members have always believed—that CRSP is accomplishing the objectives Congress established in 1956 when it authorized development of the water and power potential of the Upper Colorado River Basin. The Report also shows in explicit terms what a very favorable deal CRSP is for the U.S. taxpayer. We are writing you this letter to bring to your attention some of the details of the GAO Report which we believe are important.

POWER INVESTMENT NEARLY REPAID

Congress requires that CRSP power customers repay the federal government for the cost of CRSP power facilities with interest. The Report shows that as of September 1987, original power costs were nearly all repaid (over 96%) with only \$20.7 million out of \$608.7 million left to be repaid (Report, Tables 3.1 and 2.1, respectively). Power repayment is, indeed, far ahead of schedule.

We as CRSP power customers take pride in this accomplishment. Moreover, we expect to continue this outstanding repayment record as new power facilities are added and old ones replaced.

U.S. TAXPAYERS TO RECOVER POWER INVESTMENT FIVE FOLD

Congress gave power customers a much larger share of the responsibility for CRSP than just paying for power facilities. To help stimulate development of rural areas in the West, Congress directed them to pay all of the cost of CRSP irrigation facilities beyond the ability of the irrigators to pay. Today this means that CRSP power customers pay more than 95% of the cost of irrigation facilities.

The GAO Report predicts that power customers will eventually repay over \$5 billion in addition to interest payments, well over five times the expected \$974 million invested in CRSP power facilities. (Report, Tables 3.2 and 3.3) Clearly, there is no "subsidy" in CRSP to power customers as claimed by some. Rather, the federal government's "deal" with CRSP power customers made back in 1956 represents a very good one today for the U.S. taxpayer.

CRSP POWER COSTS ABOUT AVERAGE

CRSP power facilities were built in the days of low inflation when costs were rock bottom by today's standards. The cost of CRSP power has been 9.92 mills per kWh recently (Report, Table 5.2). On balance, this cost is about average compared to power costs listed by GAO for other, long standing federal projects.

(Please note that the "composite" rates for federal projects listed by the GAO on Table 5.2 are comparable among themselves. Power from these projects is sold at varying load factors and a further calculation is required if one wishes to actually compare the "composite" rates listed.)

CRSP CUSTOMERS' RATES COMPARABLE TO THE COMPETITION

The GAO also lists in its Table 5.2 wholesale power "composite" rates for selected utilities, including some CRSP customers. Once adjusted so that they may be compared,¹ the GAO's list shows that CRSP customer wholesale rates are generally comparable to private power company rates.

In arriving at this conclusion, however, one must be careful not to fall into the trap of thinking that the 9.92 mills per kWh CRSP cost is the only cost CRSP customers pay for power. Rates for federal projects such as CRSP are single resource rates and cannot be compared directly with any utility's ultimate wholesale power

¹ As noted above, every utility listed sells its power at wholesale under a two part, demand and energy rate. To derive its "composite" rate the GAO made some calculations but apparently failed to take differing load factor into account. (We know this because some of our own members' "composite" rates are not stated at a load factor comparable to the 58.2 percent load factor used to calculate the 9.92 mills per kWh CRSP "composite" rate.)

rate. This is because the ultimate wholesale rate is comprised of the cost of many resources—some older ones which are less expensive like CRSP, and some newer ones like the modern day, coal-fired plants owned by most utilities.

This more valid rate comparison is illustrated by the following modification of the GAO Table 5.2 which compares the blended rate of some typical CRSP customers with the rates of some investor-owned utilities which likewise blend power from older, cheaper resources with power from newer, more expensive sources. The table has also been updated to show rules currently in effect.

	Composite wholesale rate mills/kWh ¹
Consumer-Owned CRSP Customer:	
UAMPS.....	34.3
UMPA	39.0
Plains.....	71.0
Tri-State.....	45.2
Investor-Owned Utility:	
UP&L	48.4-50.7
New Mexico Public Service	74.9
Colorado Public Service	43.1-53.2
Arizona Public Service	48.1-50.1

¹ All composite rates calculated using 58.5 percent load factor.

The fact that wholesale power rates of some CRSP customers are below those of the private power companies validates Congress' historic purpose in authorizing western water power projects. Power from them was to be marketed to public bodies and cooperatives as a "yardstick" in the electric power industry. The GAO Report confirms that yardstick competition is still alive and healthy in the CRSP area.

CRSP POWER VITAL TO UTAH CONSUMERS

CRSP power is the major source of power for many CRSP customers. We note that the GAO put the number of CRSP customers at 72. The number is actually 155 as indicated in the attached list.

The Congress is considering legislation dealing with a part of CRSP—the Central Utah Project. CRSP power is particularly important to Utah's electric consumers where it comprises the majority of supply for fully half of the utilities in Utah served by CRSP. The GAO's Table 1.1, when broken down for Utah, graphically illustrates this point.

Percent of energy supplied by CRSP	Percent of customers	
	All CRSP (GAO report)	Utah only (36 customers)
0.01-25.....	32	6
25.01-50	32	44
50.01-75	25	42
75.01 or more	11	8
Total (percent)	100	100

In summary, CREDA is justifiably proud of the record of accomplishment for CRSP chronicled by the GAO. While the Report alludes to instances of under pricing of federal power elsewhere (Report, p. 32), this is certainly not the case for CRSP. The GAO Report confirms that CREDA members are repaying CRSP power costs with interest and ahead of schedule. Moreover, the Report shows that CRSP power users will contribute well over five times over the cost allocated to them, thereby fulfilling one important Congressional purpose of CRSP—enhancement of western development.

In spite of this accelerated repayment and extra cost burden, CRSP wholesale rates are still competitive with the rates of other utilities. This means that CRSP is fulfilling another important goal of Congress' water power program—to bring yardstick competition to the nation's electric power industry.

We would be pleased to answer any questions you might have about the GAO Report or the CRSP power program.

Sincerely,

THAINE J. MICHIE, *President.*

EXHIBIT A

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COLORADO RIVER STORAGE PROJECT POWER CUSTOMERS
Long-Term Firm Power Preference Customers
Fiscal Year 1987

UTAH

BRIGHAM CITY CORPORATION

DEFENSE DEPOT, OGDEN

DESERET GERNERATION AND TRANSMISSION COOP.

Bridger Valley Electric Association

Dixie-Escalante Rural Elec. Assoc.

Flower Electric Association

Garland Power Association

Moon Lake Electric Association

Mt. Wheeler Power Association

UTAH ASSOCIATED MUNICIPAL POWER SYSTEMS

Beaver City

Bountiful

Ephraim

Fairview

Fillmore

Heber

Holden

Hyrnum

Kamoh

Kayville

Lahi

Logan

Meadow

Monroe

Morgan

Mt. Pleasant

	Winter Energy (MWh) CRSP Allocation	Summer Energy (MWh) CRSP Allocation	Total Energy (MWh) CRSP Allocation	Annual Energy (MWh) Sales	Percent CRSP to Sales (1)
	26265	19635	45900	71324	57.92%
	9435	9945	19380	N/A	
	21420	20400	41820	57869	65.04%
	46078	43987	90065	136506	59.38%
	739	10480	11219	10234	98.66%
	37791	33991	71782	110204	58.62%
	121125	117300	238425	964802	22.24%
	32640	56100	88740	128071	62.36%
	5457	3289	8746	17658	44.58%
	87082	63520	150602	184161	73.60%
	7140	4233	11373	18826	51.63%
	1912	1224	3136	5400	52.27%
	4645	4335	8180	19184	43.07%
	12189	7650	19839	39139	45.62%
	714	561	1275	2363	48.56%
	7344	4972	12316	44534	24.89%
	765	612	1377	2246	55.18%
	5355	4182	9537	39898	21.51%
	10251	6885	17136	21810	70.71%
	47175	38250	85425	167955	45.78%
	561	740	1301	1501	77.98%
	2907	1785	4692	8834	47.80%
	5049	4182	9231	8779	94.63%
	3800	2754	6554	13542	43.55%

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COLORADO RIVER STORAGE PROJECT POWER CUSTOMERS

Long-Term Firm Power Preference Customers

Fiscal Year 1987

	Winter Energy (MWh) CRSP Allocation	Summer Energy (MWh) CRSP Allocation	Total Energy (MWh) CRSP Allocation	Annual Energy (MWh) Sales	Percent CRSP to Sales (1)
Murray	74205	65025	139230	229733	54.54%
Oak City	663	510	1173	2514	41.99%
Parowan	3417	2372	5789	11701	44.52%
Spring City	561	535	1096	2626	37.56%
St. George	61200	45900	107100	206800	46.61%
Payson	10455	7905	18360	32610	50.67%
Springville	16575	13133	29708	69814	38.30%
UTAH MUNICIPAL POWER AGENCY					
Provo	167280	167280	334560	437900	68.76%
Salt Lake	1964	1454	3417	8314	36.99%
Spanish Fork	14408	10710	25118	54062	41.81%
Levan	1046	1046	2091	3024	62.23%
Manti	4131	3366	7497	13259	50.89%
Nephi	6885	8670	15555	32339	43.29%
WEBER BASIN WATER CONSERVATORY	0	995	995	N/A	
WYOMING					
TORRINGTON, TOWN OF	2384	4488	6872	56865	10.88%
TRI-STATE GENERATION AND TRANSMISSION ASSOCIATION					
Highline Electric Association	30039	35709	65749	220706	26.81%
K. C. Electric Association	16573	19701	36274	121766	26.81%
Morgan County Rural Electric Association	21233	25240	46473	156002	26.81%
Mountain Parks Electric, Inc.	24736	29404	54140	181737	26.81%
Mountain View Electric Association, Inc.	32517	38655	71172	238911	26.81%
Poudre Valley Rural Electric Association, Inc.	59854	71150	131004	439756	26.81%
Union Rural Electric Association, Inc.	29532	35106	64638	216979	26.81%
Y-W Electric Association	30964	36808	67772	227498	26.81%

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COLORADO RIVER STORAGE PROJECT POWER CUSTOMERS

Long-Term Firm Power Preference Customers

Fiscal Year 1987

	Winter Energy (MWh) CRSP Allocation	Summer Energy (MWh) CRSP Allocation	Total Energy (MWh) CRSP Allocation	Annual Energy (MWh) Sales	Percent CRSP to Sales (1)
Chimney Rock Public Power District	4226	5023	9249	31048	26.81%
The Midwest Electric Membership Corp.	16802	19973	36774	123445	26.81%
Northwest Rural Public Power District	5315	6318	11633	39049	26.81%
Poudre River Rural Electric Membership Association	10563	12557	23120	77610	26.81%
Roosevelt Public Power District	4612	5483	10095	33886	26.81%
West Belt Public Power District	13268	15773	29041	97485	26.81%
Big Horn Rural Electric	7873	9358	17231	57841	26.81%
Carbon Power & Light Co.	9668	11493	21161	71032	26.81%
Garland Light & Power Co.	1875	2229	4104	13778	26.81%
Hot Springs Rural Electric Association, Inc.	47122	56015	103137	346213	26.81%
Nodawa Electric Association, Inc.	5496	6534	12030	40383	26.81%
Riverton Valley Electric Association, Inc.	36966	43943	80909	271596	26.81%
Rural Electric Co., Inc.	17543	20854	38397	128892	26.81%
Sheridan Johnson Rural Electrification Association	8210	9760	17970	60323	26.81%
Westland Rural Electric Association, Inc.	12049	14323	26373	88528	26.81%
Wynolac Company	9414	11191	20604	69165	26.81%
WYOMING MUNICIPAL POWER AGENCY					
Cody	6751	7013	13763	53103	23.33%
Fort Laramie	179	102	281	916	27.56%
Overseas	1020	918	1938	6748	25.85%
Lingle	255	204	459	2119	19.50%
Lusk	2550	816	3366	11944	25.36%
Pine Bluffs	459	217	676	6563	9.27%
Westland	2286	2448	4734	23732	17.99%
WILLWOOD LIGHT & POWER COMPANY	77	128	204	N/A	

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COLORADO RIVER STORAGE PROJECT POWER CUSTOMERS

Long-Term Firm Power Preference Customers

Fiscal Year 1987

NEW MEXICO

	Winter Energy (MWh) CRSP Allocation	Summer Energy (MWh) CRSP Allocation	Total Energy (MWh) CRSP Allocation	Annual Energy (MWh) Sales	Percent CRSP to Sales (%)
AZTEC, CITY OF	5674	4896	10570	19791	48.07%
DOE - ALBUQUERQUE OPERATIONS OFFICE	37230	37230	74460	N/A	
FARMINGTON, CITY OF	38250	38250	76500	384484	17.91%
TRUTH OR CONSEQUENCES, CITY OF	14025	14586	28611	32693	78.76%
PLAINS ELECTRIC GENERATION AND TRANSMISSION COOP.					32.12%
Kit Carson Electric Coop.	31731	32275	64005	167016	34.49%
Otero County Electric Coop.	15239	15500	30738	80209	34.49%
Mora-San Miguel Electric Coop.	6389	6499	12888	33630	34.49%
Northern Rio Arriba Electric Coop.	3387	3445	6832	17827	34.49%
Sierra Electric Coop.	3150	3204	6353	16578	34.49%
Springer Electric Coop.	10954	11142	22097	57659	34.49%
Socorro Electric Coop.	19399	19732	39131	102110	34.49%
Central New Mexico Electric Coop.	13737	13973	27710	72307	34.49%
Continental Divide Electric Coop.	50342	51205	101546	264976	34.49%
Columbus Electric Coop.	31905	32452	64357	167934	34.49%
Southwestern Electric Coop.	71205	72426	143631	374793	34.49%
James Mountains Electric Coop.	35846	36460	72306	188676	34.49%
Navajito Electric Coop.	45867	46653	92520	241422	34.49%

COLORADO

CENTER, CITY OF	3825	2550	6375	9297	61.71%
COLORADO SPRINGS, CITY OF	127500	38250	165750	2923745	5.10%
DELTA, CITY OF	2550	2550	5100	27270	16.83%
FLEMING, CITY OF	128	204	332	1441	20.70%
FORT MORGAN, CITY OF	17595	20145	37740	100376	33.84%

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COLORADO RIVER STORAGE PROJECT POWER CUSTOMERS

Long-Term Firm Power Preference Customers

Fiscal Year 1987

	Winter Energy (MWh) CRSP Allocation	Summer Energy (MWh) CRSP Allocation	Total Energy (MWh) CRSP Allocation	Annual Energy (MWh) Sales	Percent CRSP to Sales (1)
FREDERICK, TOWN OF	102	102	204	4370	4.20%
GUNNISON, CITY OF	15300	11602	26902	42804	56.56%
HAXTUN, TOWN OF	1020	1326	2346	5235	40.33%
HOLYOKE, CITY OF	3825	3749	7574	17565	38.81%
LAMAR UTILITIES BOARD	5100	5100	10200	82733	11.10%
OAK CREEK, TOWN OF	918	765	1683	8780	17.25%
PLATTE RIVER POWER AUTHORITY					
<i>Estes Park</i>	18800	16277	35077	71736	44.01%
<i>Fort Collins</i>	162641	140819	303460	620610	44.01%
<i>Longmont</i>	88535	76656	165191	337835	44.01%
<i>Loveland</i>	74019	64088	138106	282443	44.01%
PUEBLO ARMY DEBOT	11475	10200	21675	N/A	
SAN ISABEL ELECTRIC SERVICES, INC.	789	1121	1909	178618	0.96%
DELTA-MONTROSE ELECTRIC ASSOCIATION	1741	2642	4383	280194	1.41%
EMPIRE ELECTRIC ASSOCIATION	709	1201	2000	280821	0.64%
GUNNISON COUNTY ELECTRIC ASSOCIATION	657	821	1478	93031	1.43%
HOLY CROSS ELECTRIC ASSOCIATION, INC.	3209	4063	7272	536234	1.22%
INTERMOUNTAIN RURAL ELECTRIC ASSOCIATION	3691	4723	8414	588272	1.29%
LA PLATA ELECTRIC ASSOCIATION, INC.	1544	2061	3605	271592	1.19%
SAN LOUIS VALLEY RURAL ELECTRIC COOP., INC.	482	3783	4265	115081	3.34%
SAN MIGUEL POWER ASSOCIATION	832	1260	2093	104837	1.80%
SANGRE DE CRISTO ELECTRIC ASSOCIATION, INC.	339	500	840	49992	1.51%
SOUTHEAST COLORADO POWER ASSOCIATION	657	1962	2619	107118	2.20%
WHITE RIVER ELECTRIC ASSOCIATION, INC.	438	701	1139	71985	1.42%
YAMPA VALLEY ELECTRIC ASSOCIATION	2574	3442	6016	311388	1.74%
WRAY, CITY OF	2142	1199	3341	14398	20.88%
YUMA, CITY OF	2729	2869	5597	15066	33.44%

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COLORADO RIVER STORAGE PROJECT POWER CUSTOMERS
Long-Term Firm Power Preference Customers
Fiscal Year 1987

ARIZONA

ARIZONA MUNICIPAL POWER USERS ASSOCIATION

San Carlos Irrigation Project

Safford

Thatcher

ARIZONA POWER AUTHORITY

Chandler Heights Civic Irrigation District

Queen Creek Irrigation District

San Tan Irrigation District

AK-CHIN INDIAN COMMUNITY

ELECTRICAL DISTRICT NO. 3

ELECTRICAL DISTRICT NO. 4

ELECTRICAL DISTRICT NO. 5, PINAL COUNTY

ELECTRICAL DISTRICT NO. 5, MARICOPA COUNTY

ELECTRICAL DISTRICT NO. 6

ELECTRICAL DISTRICT NO. 7

MARICOPA COUNTY MUNICIPAL WATER CONSERVATION DISTRICT

OCOTILLO WATER CONSERVANCY DISTRICT

ROOSEVELT IRRIGATION DISTRICT

ROOSEVELT WATER CONSERVATION DISTRICT

WELLTON-MOHAWK IRRIGATION DISTRICT

NAVAJO TRIBAL UTILITY AUTHORITY

PAGE, CITY OF

ARIZONA POWER POOLING ASSOCIATION

Arizona Electric Power Association

Anza Electric Cooperative Inc.

Winter Energy (MWh) CRSP Allocation	Summer Energy (MWh) CRSP Allocation	Total Energy (MWh) CRSP Allocation	Annual Energy (MWh) Sales	Percent CRSP to Sales (1)
2550	4845	7395	235960	2.82%
1020	3315	4335	35367	11.03%
638	1530	2168	8333	23.41%
510	1148	1658	5077	29.38%
0	5100	5100	16416	27.96%
0	2423	2423	9559	22.81%
8415	11475	19890	N/A	
4208	24098	28305	175880	14.48%
6248	14683	20910	112956	16.66%
4463	9053	13515	72573	16.76%
2040	4718	6758	N/A	
0	17468	17468	77801	20.21%
2040	13770	15810	50520	28.17%
3825	16193	20018	27972	64.41%
1530	3315	4845	N/A	
2933	14408	17340	11551	135.11%
2805	6885	9690	77639	11.23%
383	765	1148	48886	2.11%
45900	45900	91800	468710	17.63%
16320	16065	32385	56314	51.76%
243	876	1119	21961	4.59%

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COLORADO RIVER STORAGE PROJECT POWER CUSTOMERS
Long-Term Firm Power Preference Customers
Fiscal Year 1987

	Winter Energy (MWh) CRSP Allocation	Summer Energy (MWh) CRSP Allocation	Total Energy (MWh) CRSP Allocation	Annual Energy (MWh) Sales	Percent CRSP to Sales (%)
Duncan Valley Electric Cooperative, Inc.	7476	26939	34414	675460	4.59%
Graham County Electric Cooperative, Inc.	1042	3755	4797	94152	4.59%
Mohave Electric Cooperative, Inc.	2763	9957	12721	249670	4.59%
Sulphur Springs Valley Electric Cooperative, Inc.	3631	13083	16714	328044	4.59%
Trico Electric Cooperative, Inc.	1306	4705	6010	117969	4.59%
City of Mesa	3204	11544	14748	289455	4.59%
Electrical District No. 2	1884	6788	8672	170213	4.59%
SALT RIVER PROJECT	97538	283688	381225	16079108	4.59%
WILLIAMS AIR FORCE BASE	1658	6120	7778	N/A	2.13%
YUMA PROVING GROUND (US ARMY)	638	1148	1785	N/A	
COLORADO RIVER IRRIGATION PROJECT	1020	1913	2933	N/A	

NEVADA

COLORADO RIVER COMMISSION OF NEVADA
Silver State Power Association

Boulder City, Ne.

Lincoln County Power District No. 1

Ontonagon Power District No. 5

Valley Electric Association

13411	23546	36957	102817	32.35%
6581	11555	18136	50456	32.35%
12511	21865	34476	95914	32.35%
12377	21730	34106	94886	32.35%

N/A - Information Not Available

**STATEMENT OF G. RICHARD JUDD, GENERAL MANAGER, UTAH
MUNICIPAL POWER AGENCY, SPANISH FORK, UT**

Mr. JUDD. Mr. Chairman, members of the subcommittee, my name is Richard Judd. I am the General Manager of the Utah Municipal Power Agency, UMPA, located in Spanish Fork, Utah. UMPA is a joint action agency which serves six member consumer electric utilities, including the municipality systems in the State, the largest of which is Provo.

I appreciate the opportunity to appear before you today. I am aware our time is limited. Therefore, I would like to submit my written testimony for the record and proceed briefly to summarize UMPA's position on S. 2969.

UMPA members have three reasons to be interested in this bill. First and foremost, we are interested because CRSP power customers will repay approximately 95 percent of the total cost of the Federal investment in the CUP and drainage facilities. Based on a worst-case analysis, this bill with apportionment, as required under the CRSP Act, could result in a repayment by power up to \$1.88 billion I might add without any power facilities on this system.

Second, we are interested because UMPA members and ratepayers live in central Utah and will contract to buy CUP irrigation water.

And third, we are interested because as citizens of the State of Utah, we will pay our fair share of the significant State contribution required under the cost sharing provisions of this bill to complete CUP.

UMPA supports the position articulated by CREDA, that our support for S. 2969 is contingent upon adherence to the traditional financing repayment principles. I will not take more of the subcommittee's time on this issue except to say that our primary concern that we have worked diligently at this point with our congressional delegation—my top priority is to ensure that UMPA member systems remain competitive and able to provide the cost effective electric service to the communities we serve. Our ability to compete is directly linked to the price of CRSP power.

It is important to remember that compared to the cost of other hydropower, CRSP is relatively expensive. CRSP power is significantly more than the electricity from FERC-licensed hydro projects in our own State of Utah owned and operated by Utah Power and Light. UMPA's wholesale rate to its customers is a blended rate to reflect the cost of CRSP and minority interests in the coal-fired Bonanza plant, a geothermal plant, a Hunter plant, a natural gas turbine and purchased power from Utah Power Light, our major competitor. Our rate to our members today is 38.67 mills, a rate higher than Utah Power and Light's internal power supply cost. Yet, at this point, we remain competitive.

On October 1, WAPA will institute a 46-percent increase for CRSP. That increase includes costs of some CUP facilities and costs that have been assigned to power for the ongoing Glen Canyon environmental studies. If UMPA members are to stay competitive and to continue to offer an alternative to rates and services provided by Utah Power and Light, we must hold the line on our costs, including CRSP power. In my view, the contribution that UMPA

members will make toward the completion of the CUP is not only significant in real economic terms, it is all that the Utah CRSP customers can bear.

I thank you for the opportunity today and I thank the delegation for the compromises and the work that they have done with us. We look forward to working with the Utah delegation and with the committee as the bill moves forward.

[The prepared statement of Mr. Judd follows:]

PREPARED STATEMENT OF RICHARD JUDD, GENERAL MANAGER, UTAH MUNICIPAL POWER AGENCY, SPANISH FORK, UT

Mr. Chairman, members of the subcommittee, my name is Richard Judd and I am General Manager of the Utah Municipal Power Agency ("UMPA"), located in Spanish Fork, Utah. UMPA is a joint action agency that serves consumer-owned municipal electric utilities, including the largest municipal system in the state: Provo.

The UMPA utilities and customers have a vital interest in S. 2969, the Central Utah Project Completion Act, for several reasons. First and foremost, as preference power customers of the Colorado River Storage Project, we are affected by the bill because—under the "ability to pay" provisions of federal reclamation law—power users will pay approximately 95% of the total costs of the irrigation and drainage facilities associated with the CUP. This is not an insubstantial number. To date, the Bureau of Reclamation has included in the power repayment study 1989 to 1990 \$527,326 million for CUP irrigation facilities. The bill before you would authorize an additional \$679,854 million—plus or minus—in additional appropriations for construction on the CUP, and for the planning and implementation of the fish and wildlife and recreation mitigation projects and studies.

Based on these assumptions, in a worst case analysis, the bill—with apportionment as required under the CRSP Act—could result in an additional repayment by power of up to \$1.88 billion.

Second, many residents of the UMPA member communities will benefit from construction of the I&D system, because it will deliver Colorado River water to farms in Central Utah that are commercial and residential customers of UMPA power systems. Those water users will purchase CUP water under contract with the Central Utah Water Conservancy District, according to current reclamation law.

Third, as citizens of Utah, our customers will pay their fair share of the state contribution to project construction costs, as set forth in the cost-sharing agreement contained in the bill. Resolution of the cost-sharing issue, as you know, was an essential element of the bill before you today.

I would like to make two main points about S. 2969:

1. UMPA's primary concern with S. 2969 (and the companion House bill, H.R. 3960) has been to ensure that the bill preserves traditional financing and repayment as established in the 1956 CRSP Act.

From the beginning of the debate over re-authorization of the CRSP to complete the CUP, UMPA and the other CRSP power customers have been unswerving on this point. We have made it clear to our congressional delegation, to the Central Utah Water Conservancy District, and to other participants in the debate that we will honor the obligation imposed by the CRSP authorization to repay substantially all the costs of the CUP participating project, but that we will oppose proposals to increase the financial burden on power customers, or to revise reclamation repayment principles.

As I mentioned earlier, CRSP power users will repay approximately 95% of the I&D costs. Future CRSP power rates will be increased, however, by more than is needed to repay the CUP alone. This, as the subcommittee knows, is because the "apportionment" requirement of the CRSP Act requires that for every one cent allocated to repayment of the Utah project, another 4.65 cents be deposited into the Treasury to repay costs of participating projects in Colorado, New Mexico, and Wyoming.

We recognize that it has been a difficult task for the Utah congressional delegation to craft a bill that satisfies the concerns of the many Utah interests, the environmental community and others. We are pleased that the Utah delegation supports our position on financing and repayment and has stood fast on this issue. The position of the CRSP customers, including UMPA, has always been that a "deal is a deal." We are ready to honor the "deal" contained in the CRSP Act to repay CUP irrigation costs, and to honor the "deal" that is in the bill before you.

2. UMPA strongly disagrees with those that argue that the CRSP power resource is "too cheap" and that public power rates are significantly lower than its competitors.

Over the last three years, UMPA and other public power organizations have been repeatedly told that CRSP rates are unfairly subsidized, are too low, and should be increased to pay for fish and wildlife mitigation costs. These claims are simply not true.

In Utah's electric market, UMPA rates to its member systems are barely competitive. UMPA's current load is 125 MW. We meet that demand through a mix of power resources including CRSP hydropower, a 16 MW ownership interest in the Bonanza coal-fired plant and another 10 MW of take-or-pay contract, 17 MW of natural gas generation 10 MW of geothermal, 24 MW of the Hunter One coal plant, and a contract with our primary competitor—Utah Power and Light Company—for from 2 to 8 MW. UMPA's wholesale rate to our member cities is currently 38.67 mills—a cost higher than Utah Power and Light's power supply costs.

In October, 1990 the rate charged by WAPA for CRSP power to UMPA will increase by 46% to 15.5 mills. The rate increase is attributed to costs of the Glen Canyon Dam environmental studies, which today are charged 100% to power users. This increase must, of course, be reflected in our rates to our members and will make it increasingly difficult to stay competitive with UP&L. Those who cavalierly assert that "public power can pay more" for CRSP power either do not understand the competitive realities of the electric market in Utah, or do not value the role that public power systems play by providing consumers with an alternative to franchise service provided by the investor owned utilities.

I would like to remind the subcommittee that when the CRSP was originally authorized, the federal government had a difficult time marketing the hydropower power, because it was more expensive than other resources available in the region. It was because the preference customers were willing to sign long-term contracts that the CRSP and its participating irrigation projects became a reality. I doubt that anyone would offer to bail out the CRSP power users if we had made a bad deal: if hydropower turned out to be more costly than coal, or gas, or nuclear power. And I don't think the CRSP customers should be penalized, or asked to pay more, because in today's environmental and energy markets hydropower is a less expensive generation option.

As a matter of fact, compared to the cost of other hydropower, CRSP is relatively expensive. CRSP power is significantly more costly than electricity from FERC-licensed hydro projects in our own state of Utah owned by UP&L. I do not dispute the fact that CRSP is a valuable resource, but I do disagree with those that believe that public power is reaping a windfall from federal power and that we should shoulder higher costs, and assume a greater role in financing the ambitious project that is before you today.

I want to conclude by thanking you for the opportunity to appear here today. I look forward to working with the Utah delegation and with the committee as the bill moves forward.

Senator BRADLEY. Ms. McNeil.

**STATEMENT OF CAROLYN S. McNEIL, GENERAL MANAGER,
INTERMOUNTAIN CONSUMER POWER ASSOCIATION, SANDY, UT**

Ms. McNEIL. Mr. Chairman, I have been sitting here with all the euphemisms going through my mind about being last, "The last shall be first" and "He who laughs last."

Senator BRADLEY. At the choice of the panel.

Ms. McNEIL. I sincerely appreciate your patience in sitting here and listening to all of our issues.

I noticed today, as I have sat, that I have not heard much recognition given to the fact that the underwriting of the irrigation and drainage portion will be done by the public power community.

I am Carolyn McNeil. I am General Manager of the Intermountain Consumer Power Association, and I represent the interests of the majority of the consumer-owned electric utilities in the State of Utah that buy power from the Western Area Power Administration. We administer to 37 members their allocation of Federal hy-

dropower, and they in turn serve a diverse population of about 300,000 people living in Utah, Nevada, and Arizona. In the State of Utah public power serves about 25 percent of the electrical needs. Our largest members serve a population of about 30,000, and the smallest one serves about 300.

And I would like to reiterate what was said by the gentlemen from the Duchesne and Garfield Counties, and that is most of the public power community serves rural areas, and they are very, very depressed. It is not just those two counties that are looking at double digit unemployment.

ICPA has been around about 33 years, ever since the Federal Government came around beating the bushes trying to find some people who would participate with them and help to pay the costs of the water development. We signed up, and it has been a good program for us even though, as Mr. Judd said, it was relatively expensive when we got into the business. But it has been a good project, and we are willing to fight for it now.

CRSP power used to cover all of our loads. It doesn't anymore. About 50 percent of our loads are covered by supplemental power. And as Richard said, those are high cost, coal-fired, new plants that make—it is only livable because we blend those power resources and have a resource base that is affordable. But you have to realize that into our back yard last year moved the 14th largest utility in the United States of America when Pacific Corp. and Utah Power and Light merged. And when they came into our area, they said that they were there to be competitive, and they are very definitely doing that. In the year and a half that the merger has been in effect, they have dropped their rates 17 percent.

And what has happened to ours? Well, on an average monthly usage level of 600 kilowatt hours, our residential rates are now higher than Utah Power and Light in one-third of the public power cities. Small commercial customers in two-thirds of the public power systems already pay higher rates than Utah Power and Light. And these comparisons sadly do not reflect the 46-percent increase that WAPA is going to hand to us on October 1, nor does any of that reflect the cost of the Central Utah Project to us. Those will all be additive, and it may very well be—and we do not say this just rhetorically. It may very well be that we drive a lot of our small utilities out of business with these extra costs.

It is a tough proposition. We have, however, reflected upon this a great deal and realize that it is our obligation. It was the deal that we struck years ago. So, the bill before you reflects fierce debate and delicate compromise. It is not something that any of us describe as ideal, but it is something that we have agreed to accept. And as you know, the interests of the various stakeholders in the Central Utah Project frequently conflict. But I for one am proud of the cooperation that was displayed by each of the parties to continue working toward consensus despite all of our great differences.

There is one thing, though, we would like to leave in closing. Let me go back and say that we thank CREDA, all the other members. We thank our Federal delegation, Congressmen Nielsen, Hansen, and Owens. We thank Senator Hatch, but especially Senator Garn for making promises to us and keeping those promises and acting in good faith in dealing with us. But we have to emphatically state

that any change to the funding and repayment methods or imposition of additional costs on power users will force us to vigorously oppose this bill. But as long as Senate bill 2969 maintains traditional funding and repayment methods set forth in the CRSP Act, then we will participate.

[The prepared statement of Ms. McNeil follows:]

PREPARED STATEMENT OF CAROLYN S. MCNEIL, GENERAL MANAGER, INTERMOUNTAIN CONSUMER POWER ASSOCIATION, SANDY, UT

As general manager of the Intermountain Consumer Power Association (ICPA), I represent the interests of the majority of consumer-owned electric utilities in the state of Utah that buy power from Western Area Power Administration. ICPA administers its 37 members' allocations of federal hydroelectric power, who, in turn, furnish electric service to a diverse population of approximately 300,000 people living in Utah, Nevada and Arizona. Our largest member serves a population center of almost 30,000; the smallest, (serves) a town of 300. ICPA customers, for the most part, our customer reside in depressed rural areas.

ICPA became a partner in the Colorado River Storage Project (CRSP) shortly after Congress authorized the project in 1956. The CRSP Act pledged power revenues to help repay a significant portion of the federal government's investment in this massive water development project. CRSP power became available in 1964, and until 1976, it was our sole resource. Today it represents about one-half of our power supply.

Because of the importance of CRSP to our members' resource base, ICPA has remained active in issues affecting its cost and availability. As a participating project of CRSP, the Central Utah Project will have significant impacts on our members' rates. We are grateful for the opportunity to testify about those impacts.

Helping to find an acceptable funding solution for the Central Utah Project has been ICPA's top priority for the last two and one-half years. It has consumed a sizable portion of our time and resources.

As a member of the Colorado River Energy Distributors Association (CREDA), we have worked closely with representatives from the upper Colorado River basin states to negotiate a new compact allowing them to develop their entitlement from the Colorado River. We have worked hand-in-hand with all members of the Utah delegation, the Central Utah Water Conservancy District and the State of Utah.

As you know, the interests of the various stakeholders in the Central Utah Project frequently conflict. I, for one, am proud of the cooperation displayed by each of the parties to continue working toward consensus, despite great differences.

The bill before you today reflects fierce debate and delicate compromise. It is not something any of us would describe as "ideal." At best, it is something each of us has agreed to accept.

From the outset, ICPA vowed to honor public power's historical obligation to help repay irrigation costs in participating projects that exceed the water users' "ability to pay." S. 2969 maintains the traditional funding and repayment methods set forth in the CRSP Act. However we do not accept the cost of our obligation without hardship. There are no power generating facilities associated with this legislation, yet CRSP customers will assume the burden for repayment of the major portion the irrigation features. In this case, power users will repay about 95 percent of the federal government's investment in the Irrigation and Drainage system of the CUP. It will have adverse impacts on our members' competitive position.

I want to emphasize the negative impact of rate increase on ICPA members in order to correct the misconception that public power can absorb massive rate increases without difficulty. We cannot. The competitive viability of many public power utilities is already doubtful.

At an average monthly usage level of 600 kilowatt hours, residential rates are now higher than the competing investor-owned utility in one-third of Utah public power systems. Small commercial customers in two-thirds of public power systems already pay higher rates. These comparison do not reflect the upcoming 46 percent CRSP rate increase on October 1, nor the rate impacts of this bill.

As I described earlier, CRSP accounts for only one-half our power supply. As the oldest resource, it is also the lowest cost. Our rates reflect the blend of CRSP with newer much more expensive resources. Where purchased power represents more than 50 percent of total operating costs in the majority of our member systems, increase in power supply costs will worsen their competitive standing and seriously threaten their viability.

I ask the committee to consider the impact of increased CRSP rates on the ability of ICPA members to meet the energy needs of their ratepayers at a competitive price. This is certainly not a bill public power can endorse, but (it is) one we can live with. Like CREDA, we must emphatically state that any change to the funding and repayment methods or imposition of additional costs on power users will force us to vigorously oppose the bill.

Thank you, Mr. Chairman, for the opportunity to make my comments this morning. I also wish to thank Senator Garn for his personal commitment and that of his staff to forge a consensus among widely disparate interests. I will be happy to respond to any questions you or the committee members may have.

Senator BRADLEY. Thank you very much. Let me ask you one or two questions.

Mr. Barrett, you are familiar with the CREDA agreement, obviously, are you not?

Mr. BARRETT. Yes.

Senator BRADLEY. I do not know if that is what you were making reference to, Ms. McNeil. I think it was, but the question is this was struck back in 1983 that you do not have to rate-set certain projects if the determination is made they will not be built.

Last summer, July 1989, we got some information supplied by WAPA and the Bureau. I would like to read a sentence to you. It says: "Cumulative power revenues would have increased from approximately \$8 million to \$13.7 billion if all deferred and unexpended participating project investments were including in the rate-setting period." Now, that is a mind-boggling number. And my question to you is under what authority did the Bureau enter into the 1983 agreement.

Mr. BARRETT. Probably you should ask somebody from the Bureau that question, sir.

Senator BRADLEY. But you were working with the Bureau at the time in Salt Lake City.

Mr. BARRETT. I was there. That is correct. But I do not want to represent myself today sitting at this table as representing the Bureau of Reclamation.

But I think it was done under the terms of the 1956 act, the theory behind the thing being why should power users be obligated to pay for projects which will likely never be built. And it is true. If you put every project into the rate which was authorized in the 1956 and 1968 acts, it would have a tremendous impact on the power rate. But I guess as regional director at that particular point in time, I could see no reason why should obligate anybody to pay for projects for which there were definite plan reports, there were no EIS's, there was no obligation, no indication that Congress was ever going to provide the money to build them.

Senator BRADLEY. Well, do you think that same thought process ought to apply to construction ceilings?

Mr. BARRETT. Probably so.

Senator BRADLEY. Probably so. Well, you will not get a disagreement with me on that.

Do you think that steps should be taken by the Bureau, WAPA and Congress to recover the revenues foregone by excluding some projects from the rate-setting period?

Mr. BARRETT. No, sir, because the projects which were excluded were those which will never be built. Still I see no reason at all

why anybody should pay for projects which are not going to be built, power users or otherwise.

Senator BRADLEY. What sunk costs for the Central Utah Project are now included in the rate-setting process?

Mr. BARRETT. I do not have the number right at hand, but I can tell you this. The rate which we are paying now, which is approximately 10 mills, includes some sunk costs for CUP. The rate which goes into effect October 1, which raises that 10 to 14 and a half, includes 2 more mills for sunk costs in CUP.

Senator BRADLEY. Have any sunk costs for CUP been excluded?

Mr. BARRETT. I think, sir, in the 1983 agreement there were certain segments of the Central Utah Project for which the EIS and DPR had not been done, and they were then put outside the rate-setting period, and they will come in with the passage of this bill. As I read the bill, they will come in with the passage of that bill, and that then adds 2.6 mills to the rate.

Senator BRADLEY. So, parts of the project that have been excluded from the rate base will come into the rate base.

Mr. BARRETT. Yes, sir. My understanding is that it is upon the passage of this act, and the act has language which says the DPR will be deemed as having been done even though it is not done, and the EIS will be deemed as having been done even though it is not done. Those costs will then all be put into the rate base.

Senator BRADLEY. I want to say that you offered us a certain clarity when you argued that the same apply to construction ceilings that apply to rate-setting. And I think that that is an interesting idea. Did you feel that way when you were working for the Bureau?

Mr. BARRETT. Oh, no, sir. I think the Bureau's position was they were doing what was required by law, but I think you can make the logical argument the other direction.

Senator BRADLEY. Senator Garn.

Senator GARN. Thank you, Mr. Chairman. I thank all of you for coming.

I would just like to summarize what we have heard today that I think is highly unusual because 3 years ago, we were challenged by various Members of Congress, particularly on the House side, that there was absolutely no possibility of increasing the ceilings for CUP unless we could get together as a group. And we were not together, and I do not think anybody thought that was achievable. So, what you have heard today is that the delegation is united, that public power agrees with the bill as it is now written. The environmentalists testified in favor of it. The Ute Indians testified in favor of it. The State of Utah has testified in favor of it, and the Central Utah Water Conservancy District has testified in favor of it. There is just one odd man out, and that is the administration.

Senator BRADLEY. And I might say the Central Utah Conservancy District expressed a certain flexibility to try to deal with some of the administration's questions.

Senator GARN. That is correct.

So, I would almost think this should be a pattern for other disputes because in the time I have been here, Senator Bradley, I do not ever remember such a controversial issue with so many different viewpoints frankly being resolved with everybody coming in.

So, the Utah delegation together has achieved what we were told to do. And even though, again, everybody said it is not perfect, we would each like to write it in our own image I suppose, but I want that to be left very strongly with this subcommittee and the committee that it is a very unusual situation to get every group together except one. And I have already expressed my opinions about that. They just were not players. And I invited them over and over and over again. And I hate to roll my own administration, but they were not willing to participate as we went along. If they were, they obviously could have had some input.

So, I am very pleased that so many different groups have been able to sit down and work things out in a civilized and dignified manner despite the fact some of those negotiations were very difficult. We have all done some yelling and shouting in the process, but the end result is exactly what we were asked to do. And so, I would hope that with that broad, broad consensus, except for the administration, that we could move ahead rapidly and put this behind us before this session is over.

I want to thank you, Mr. Chairman, having been around this body for 16 years for sitting so patiently for so long and listening to all of the testimony, and I thank you for that not only as a colleague, but as a friend for taking your time and your interest in doing that.

Senator BRADLEY. Thank you very much, Senator Garn. Let me thank the last panel for their testimony. Let me thank all of the witnesses today who I think have shared with us the diversity of views and the unity of agreement which, as you say, is maybe not unprecedented. I think we are going to mark-up the Pyramid Lake bill tomorrow where there is the same kind of unity. But it is certainly significant.

We have given the Bureau a few days to come back with some answers to questions. We hope if there are any questions that deal with the Central Utah Conservancy District, that you can facilitate that, Senator Garn, and we will try to move on this bill as soon as we have answers to some of these questions.

It is my expectation, to the witnesses who testified today, if we manage to move this through this year, which I am not saying we will not, it is because of the care and also the clarity of your testimony that has made it possible. Let me thank you all.

The subcommittee will stand adjourned.

[Whereupon, at 12:40 p.m., the hearing was adjourned.]

APPENDIX

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD



United States Department of the Interior

BUREAU OF RECLAMATION
WASHINGTON, D.C. 20240



IN REPLY
REFER TO

UPO-105

SEP 24 1990

Honorable Bill Bradley
United States Senate
Washington D.C. 20510

Dear Senator Bradley:

As requested, at the September 18, 1990, hearing on S. 2969, the Central Utah Completion Act, we are providing information relating to your questions.

In responding, we have enclosed three primary documents, (Enclosure 1) Central Utah Project, Bonneville Unit, Municipal and Industrial System Final Supplement to the Final Environmental Statement filed with EPA March 16, 1987; (Enclosure 2) Jordanelle Dam, Bonneville Unit, Central Utah Project, Joint Report of Architect - Engineer Consulting Group, December 3, 1986, and (Enclosure 3) A Joint Report of Architect - Engineer Consulting Group, July 10, 1988. These will be referred to in response to specific questions. In addition, we are enclosing a video on Jordanelle Dam, A Factual Report which may be of interest to you and members of your subcommittee in understanding the measures which have been implemented to assure a safe dam at the Jordanelle site.

Question 1 Has Jordanelle Dam been analyzed for a potential maximum creditable earthquake of 7.7 magnitude on the Wasatch Front? Also, what is the earthquake design at the site?

Answer Jordanelle Dam was designed for a maximum creditable earthquake of magnitude 7.5 on the Richter scale on the Wasatch Front, some 20 miles west of Jordanelle, and an earthquake of 6.5 magnitude near the site. (Enclosure 1, pages 6 and 7). During the 1988 Consultants Group Review of Jordanelle, new information of earthquake magnitudes on the Wasatch Fault in the 7.5 to 7.7 range were addressed by Dr. Arabasz, the seismologist on the consultants panel. Reference is made to Enclosure 3, Pages 28 (middle of page) and 29 (through the first paragraph) and pages 36 to 38 (Paragraph 5.2, "Earthquake Ground Motions").

Question 2 Have local landslides in the vicinity of the Jordanelle Damsite been considered in the location and design of Jordanelle Dam?

Answer Yes. The local landslides were identified and stability studies were conducted in the early 1980's as a part of extensive foundation explorations. These resulted in relocating Highway 40 above the landslides, moving the axis of the dam upstream to avoid the slide areas, relocating the waterways to the left

abutment to avoid the slides, and making other adjustments in the design to avoid impact on the slide areas.

Reference is made to Enclosure 1, page 20 for highway relocation; to page S-8 (Summary pages) for the outlet works relocations; and to page S-2 for moving the dam axis upstream. Reference is also made to Enclosure 2, page 6, regarding location of the dam with respect to the landslides.

Question 3 Have local landslides and steep slope been analyzed in the reservoir basin?

Answer The Jordanelle Reservoir Basin has been mapped on several occasions for various purposes. All known mapping data have been reviewed by Reclamation to determine the landslide potential of various geologic units within the proposed reservoir area. In addition, Reclamation initiated contracts for aerial photography and geologic mapping of the reservoir area. Enclosures 4 and 5 include excerpts related to geologic design and specifically to landslides and wave erosion along the rim of the reservoir. These documents indicate only minor potential landslides in the Jordanelle Reservoir area. Jordanelle Dam has a flood control surcharge capacity of about 50,000 acre-feet above the normal operating level, representing 16 feet of elevation. In addition, 3 feet of free board has been allowed to the top of the dam, making it highly unlikely for slides and associated waves to overtop the dam. Furthermore, additional areas of surface failures along reservoir slopes during periods of reservoir draw down are being minimized by Reclamation by: (1) maintaining the integrity of the reservoir management boundary as described in Enclosure 1 on page 20, and (2) preventing the encroachment of questionable facilities and utility easements, such as sewer lines, along steep, potentially unstable slopes in the reservoir area.

Question 4 What consideration has been given to avoid the migration of heavy metals into the reservoir from deposits and mines in the area?

Answer Reference is made to Enclosure 1, pages 14 to 16 with regard to mine tailings and other sources of heavy metal contaminants, and page 8, near bottom of page, to page 9 for impacts of the reservoir on the mines. While the latter relates to reservoir impacts on mines, the reverse would also be applicable.

Question 5 What contingency plans have been developed for heavy metal migration and other potential pollution hazards at Jordanelle?

Answer Enclosure 1, page 16, second and third paragraphs relate to contingency plans associated with potential trace metals, and

related problems at Jordanelle. In addition, Enclosure 1, page 11 and extending through page 13, refers to a Water Quality Management Plan which has been implemented and includes several elements that relate to monitoring and contingency actions. These include elements 5, 6, 7, 8, and 10.

In addition, we prepare an Emergency Preparedness Plan (EPP) which is made a part of the Standard Operating Procedures, for all major dams. The EPP covers actions to be taken during possible emergencies that may occur, ranging from oil spills, to sabotage and dam failure. The EPP contains a detailed flood inundation map showing the areas that could be flooded during both a major natural flood and a sudden dam failure. Also, the travel times of the flood wave to key locations and flow velocities are included. The plan is coordinated with the public officials and law enforcement agencies and covers notification procedures and each agencies role during an emergency. It is periodically reviewed and updated.

Question 6 Have selenium evaluations been made for project lands?

Answer Trace element studies have been carried out through soil sampling of Bonneville Unit project lands. There are low levels of selenium in the Sevier River drainage lands. Enclosure 6 shows results of trace element studies, including selenium. The study indicated that trace elements in the lower Sevier basin would not be significant. There are no full service lands in the area. Accordingly, increased irrigation return flows from supplemental irrigation would be more diluted with consequently lower levels of salinity and metals than existing return flows.

A recent issue of selenium in a wetland near Delta should be investigated further as a part of the finalization of the Irrigation and Drainage System plan. Properly designed, the plan could enhance the wetland and/or reduce any existing selenium problems.

Low levels of selenium have also been identified on the land in the Mona-Nephi area. The land will be further evaluated, but could be dropped from service if there is a significant problem.

Question 7 Has the cost ceiling been exceeded for Bonneville Unit based on the Inspector General's February 1988 recommendations?

Answer The authorized appropriation ceiling for the Colorado River Storage Project has not been exceeded. The current indexed CRSP ceiling is \$2,229,177,000 compared with appropriations of \$2,009,644,057 through September 30, 1990, resulting in an unexpended ceiling of \$219,532,943. Reclamation provided a tabulation showing the original cost indexed to October 1990 for

each project, the amount applicable to general legislation, and the appropriations through FY 1990. The column "Appropriated Through FY 1990" was in error and a revised tabulation is included as Enclosure 8. Based on this comparison of the indexed cost for each unit or project, the Bonneville Unit funding has exceeded the indexed cost, including the amount for general legislation.

Enclosure 7 is the February 1, 1990 memorandum from the Intermountain Regional Solicitor outlining an opinion on whether Reclamation is required to update the appropriation on an individual unit or project basis and report this information in budget documents to Congress and whether the legislation prevents Reclamation from reporting to Congress on an individual unit or project basis.

The opinion makes reference to Conference Report No. 1950, 84th Congress, 2nd Session, 8 (1956), which spells out the intent of the Congress that in leaving, "this amount in the bill, agreed that it should not be earmarked project wise", and H.R. No. 92-944, 92nd Congress 2nd Session (1972) reiterates that: "The funds are authorized in a lump sum and need not be appropriated precisely in accordance with the current estimates of disposition."

The opinion regarding the second question was that, "although reporting on an individual facility, unit or project basis may not be expressly forbidden, if such reporting implies authorization on an individual facility, unit, or project basis it is contrary to the intent of the Congress which directed that this amount authorized to be appropriated. . . should not be earmarked project wise. Conference Report No. 1950, supra.

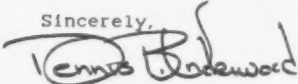
Question 8 What would be the impact on Bureau personnel if the Central Utah Water Conservancy District takes over the remaining construction of Bonneville Unit?

Answer As a result of the possibility of the District taking over construction of the remaining features of Bonneville Unit, there would be a gradual decrease in Bureau employees assigned to the project.

Presently, the Bureau has about 200 people working on the Central Utah Project (CUP) including about 150 in the Provo, Utah, field offices, 25 in the regional office in Salt Lake City, and 25 in Denver. The number of employees working on CUP will diminish as features of the project are completed. Currently about 50 percent of the Bureau employees assigned to Bonneville Unit are working on Jordanelle Dam and associated Municipal and Industrial (M&I) System activities. The residual are working on the Diamond Fork System and other features of the project. As the M&I System is completed during the FY 1992-1993 period, the 100 employees would be reassigned, relocated, or not replaced. After November

1994, major construction support will require the remaining 100 employees to complete Diamond Fork System features being constructed by the Bureau. Such Diamond Fork features will be completed during the FY 1994-1995 period. This will result in further reduction in Bureau construction and support employees. Beyond FY 1995 Bureau involvement would be limited to oversight activities associated with completion of the remaining Bonneville Unit features by the District. Bureau forces to support such efforts would be about 18 employees, including 12 in the field office, 3 in the regional office and 3 in the Denver office.

Sincerely,



Dennis B. Underwood
Commissioner

Enclosures 1-8

(Committee Note.--Due to the voluminous nature of enclosure No. 1, it has been retained in Subcommittee files.)

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U.S. Bureau of Reclamation
Engineering and Research Center
Denver, Colorado

JORDANELLE DAM

Bonneville Unit
Central Utah Project

JOINT REPORT OF ARCHITECT-ENGINEER
CONSULTING GROUP

3 December 1986

Ralph B. Peck
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ENCLOSURE

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1. INTRODUCTION

1.1 Consultants' Review

A group of individual consultants, consisting of Walter J. Arabasz, Richard H. Jahns and Ralph B. Peck, was convened in November 1982 to review the results of field investigations and design studies made by the staff of the U. S. Bureau of Reclamation on the proposed Jordanelle Dam in north-central Utah. Since the submission of the joint report of the members of that group, the Bureau has performed a large amount of additional exploration and field investigations at the site and has conducted extensive conceptual design studies on possible project structures.

The purpose of the present meeting of four individuals (hereinafter called the Group) has been to examine the new exposures and data derived from the work done at the site since 1982 and to review the project design proposals prepared by the staff of the Bureau of Reclamation based on these new data.

The present Group includes two of the individual consultants convened in 1982, W. J. Arabasz and R. B. Peck. Glenn S. Tarbox of Denver, Colorado, has been added. The unfortunate death of Dr. Jahns resulted in his replacement by Douglas D. Campbell of Vancouver, Canada.

1.2 Schedule

The members of the Group arrived in Park City, Utah, on September 7. On the morning of September 8 the Group was given a detailed briefing by the staff of the Bureau of Reclamation. This included presentations of conceptual design alternatives. Site examinations were made that afternoon and

the next morning. During the remainder of September 9 the members of the Group discussed various aspects of project design with the Bureau staff and began the preparation of this report. In the afternoon of September 10 the members gave a brief oral summary of their conclusions to the attending staff of the U. S. Bureau of Reclamation and then departed Park City. The component parts of this report were completed by the individual consultants in their home offices and the full report compiled therefrom.

1.3 Acknowledgments

The members of the Group wish to express their appreciation to all of the participants from the U. S. Bureau of Reclamation and other agencies who ensured that all of the required data and information were provided to the Group and that a comprehensive site examination was made as expeditiously as reasonable. The excellent cooperation from all of the participating Bureau personnel has been invaluable to the Group in its examination of the site and in its preparation of this report.

2. SUMMARY AND RECOMMENDATIONS

1. The Group concurs that a dam of the proposed size at the Jordanelle site is entirely feasible along the presently selected upstream axis (centered along the West Tributary gulch on the right abutment) presently favored by the Bureau project staff.
2. Either an all-embankment dam or an embankment dam with an RCC section would, in the opinion of the Group, be suited for the selected Jordanelle axis. At this time the Group considers that a composite embankment-RCC dam is more advantageous because of its better accommodation of the required waterways.
3. The foundation rock, primarily massive andesite porphyry, is the same for all of the dam alternatives at the selected axis. Where it is weathered, the porphyry has properties ranging from moderately soft rock to soil, depending on the intensity of weathering.
4. The depth of excavation of the foundation rock beneath the dam will differ along the axis in accordance with the depths and intensity of weathering of the rock, which are strongly influenced by local fractures, contacts and other permeable zones.
5. The flood plain of the river, comprising about 35 percent of the length of the dam foundation, is blanketed by clean bouldery gravel to a depth of 30-40 feet, except at the buried channel where the depth to bedrock is about 85 feet. Below the gravel the condition of the bedrock ranges from moderately weathered to fresh. The many core holes in the flood plain indicate that the bedrock beneath the boulder bed is relaxed on flat fractures and is groutable.

There is no definitive evidence for the existence of a major shear or fault beneath the flood plain. However, the spacing and location of the drill holes do not preclude the possibility of such a feature. About three additional suitably located angle holes (Fig. 1) would virtually eliminate this uncertainty. Moreover, whatever residual doubt might exist because of concealment by the alluvial cover will be resolved when the bedrock surface is exposed before construction of the dam.

6. Extensive field investigations at the Jordanelle Damsite indicate that the proposed foundation and abutments can be considered free of faults and shears that would pose a potential for expectable coseismic surface faulting.
7. Design earthquake ground motions for this project will appropriately be governed by: (1) maximum credible earthquake (MCE) of magnitude $7\frac{1}{2}$ on the Wasatch fault, as close as 19 miles (30 km) west of the dams site; and (2) an MCE of magnitude 6 to $6\frac{1}{2}$ (below the threshold of surface faulting in the Intermountain seismic belt) for a local random earthquake beneath the dams site. It is suggested that special attention be given to the selection of loading parameters and to design analysis for seismic safety.
8. Potential effects of reservoir induced seismicity (RIS) from impoundment of a Jordanelle Reservoir will be less than or equal to those already considered for safeguards against a maximum credible earthquake ground motion. Because RIS will have an inconsequential impact on safety of the dam, public confidence would be enhanced by open discussion of the possibility of RIS at Jordanelle.
9. If the composite embankment-RCC structure is adopted, it may prove advantageous to extend the RCC section to the left abutment and to extend it far enough toward the right

to permit constructing a simple wrap-around connection of the embankment to the RCC structure. This geometry would favor a near-vertical core in the embankment section.

10. The shells of the embankment section should preferably consist principally of compacted gravel derived from the riverbed alluvium. Unless there should be a significant economy, it would be preferable to avoid substituting clayey gravel for riverbed alluvium.
11. Of the various embankment cross sections studied by the Bureau, those consisting of compacted riverbed alluvium with a concrete facing and slopes of 1.5:1 or of a clayey core are considered superior to the others. The latter configuration would probably require a flatter upstream slope, but it would permit a simple connection to the RCC portion of a composite structure.

The design featuring an upstream clayey gravel membrane is regarded as without sufficient precedent to be used presently for a dam as high as Jordanelle.

12. The cross-section of the proposed RCC portion of the dam is conceptually satisfactory and consistent with designs used for the static and dynamic conditions anticipated.
13. Placement of the RCC could be simplified and the retaining wall eliminated by extending the RCC section to the right so that the embankment wrap-around would not encroach on the spillway, and by extending the RCC section to the left abutment.
14. The spillway over the RCC section is of an appropriate design and the Group endorses the plan to perform model studies.
15. Revision of the outlet works and elimination of the low level outlet should be considered.

3. SITE GEOLOGY

3.1 General

The Jordanelle damsite is located near the north end of the Heber Valley where the bed and floodplain of the Provo River are confined to a shallow canyon that is flanked by locally steep but generally moderately sloping walls underlain by relatively competent Tertiary volcanic rocks termed the Keetley Volcanics.

Immediately upstream of the selected axis location the valley broadens and the right abutment becomes a mile-wide slope of low, terraced hills of Tertiary alluvium and Quaternary colluvial deposits.

Downstream of the axis the abutments are less steep and are both underlain by what appear to be relicts of very old landslides.

The choice of the selected dam axis location has been governed by the favorable topography, the desire to place most of the dam foundation on the most competent foundation rock in this section of the Keetley Volcanics, and the desire to be far enough upstream of the downstream landslides so that waterway tunnels and other works would not be in or on potentially unstable slide material.

Approximately 35 percent of the length of the proposed dam crosses the flat flood plain of the Provo River. At the axis this plain is covered by alluvial bouldery gravel, 30-40 feet in depth, lying on a relatively flat surface of fresh to moderately weathered bedrock. Near the left abutment, almost beneath the present riverbed, the ancient Provo River eroded a minor canyon, about 100 feet in width and 50 feet in depth, in the bedrock that underlies the flood plain.

The field investigations completed to date by the Bureau at the Jordanelle damsite, including very extensive trenching and diamond drilling, have been both comprehensive and diagnostic, thus producing an excellent data base from which to evaluate the damsite confidently.

3.2 Surficial Deposits and Weathered Bedrock

The materials above the underlying unweathered bedrock that are pertinent to the Jordanelle project are:

- (i) The river flood plain,
- (ii) The upstream right bank terraces, and
- (iii) The local deeply weathered bedrock.

The downstream landslides have influenced the choice of the location of the dam axis but will have little or no direct effect on the project.

The flood plain deposits of the Provo River are exposed along the river banks and in a pit at the damsite, and they have been extensively penetrated by exploratory drill-holes. The deposits in this area are uniformly clean boulder gravels with aggregate sizes ranging up to 2 feet or more in diameter. The aggregate is made up of well rounded, hard, tough igneous and sedimentary rocks of which reddish quartzites are prominent. This material would constitute excellent embankment material, highly resistant to weathering or mechanical deterioration.

The upstream right bank terrace deposits were not examined by the Group; however, material like them was examined in trenches along the northwest end of the selected dam axis. The Bureau geologists report that the material is essentially the same in character as the terrace deposits, although more clay beds occur in the terraces. The material at the damsite

consists of a loose deposit of angular to subangular pieces of variously weathered bedrock, generally about 6-9 inches in long dimension, within a non-stratified sand to pea-gravel matrix. Many of the rock pieces in this material were highly weathered, soft, and readily broken. As an embankment shell material it would be inferior to the river flood-plain boulder gravel, although it could serve as a suitable core.

This colluvial-like material has characteristics typical of glacial morainal deposits in that it is poorly sorted, is only locally and crudely bedded, and its fragments are angular to assymmetrically subrounded. The intercalated clay beds reported to occur within these deposits upstream of the damsite would also be typical of outwash glacial deposits.

The weathered bedrock at the damsite is important to the design and construction of the dam. The weathering of the bedrocks at the site has been locally pervasive and is irregular in its depth and intensity, being particularly concentrated along rock contacts, fractures, and faults. It is typical of sub-tropical (Tertiary) weathering and has developed local concentrations of saprolite throughout the site. Because the selected axis for the proposed dam is along prominent outcrops of the youngest igneous rock in the area (mid-Tertiary), an intrusive porphyritic andesite, the weathering of the bedrock is less intense than in the older rocks downstream.

3.3 Foundation Rock

3.3.1 Volcaniclastics

Most of the Kestley Volcanic rocks in the general vicinity of the damsite, particularly to the southeast, are volcaniclastic coarse breccia and tuffs of predominantly subaerial origin. These rocks range from fine tuffs, with poorly developed bedding, to chaotic structureless breccias. They are massive, infrequently fractured, and tough, but near the surface and along fracture zones, etc., they have tended to decompose, from both weathering and hydrothermal action, more readily than the nearby related intrusive rocks.

The fresh volcaniclastics, well exposed in the many drill cores from the river bed, will provide excellent foundation for the dam, because they are hard, structurally homogeneous and amenable to cement grouting.

3.3.2 Porphyry

At the selected axis the rock on both abutments and underlying the flood plain is entirely a massive, fine-medium crystalline plagioclase-hornblende porphyritic andesite. This rock forms the prominent cliffs of both abutments and is of intrusive origin although, since its matrix tends to be aphanitic and since it is intrusive into Tertiary gravels, it is clearly a hypabyssal intrusive that intruded high in the crust and could have been a feeder for surface flows. The excellent trench exposures of this rock demonstrate the dominant intrusive nature of emplacement of this porphyry, as well as the tendency for it to fracture and shear the intruded rocks along its contacts. (These disturbed, more permeable contacts have subsequently experienced locally deep weathering.)

The intrusive origin of the andesite porphyry, together with its relatively young mid-Tertiary (Oligocene) age, have produced a generally structurally massive, competent rock that will be a sound, groutable foundation for the proposed dam.

3.4 Foundation Structures

3.4.1 Fault and Fracture Zones

The excellent colored photos of the cores from the drill holes along the selected dam axis indicate that the andesite porphyry and the underlying volcanoclastic rocks are essentially devoid of significant permeable, fault, shear, and/or fracture zones. Such zones exposed in some trenches are largely the result of near-surface weathering along relaxed fractures, joints, and contacts. This weathering has broken down the wall rocks and developed extensive clay lenses which exhibit slickensided surfaces resulting simply from normal gravitational movements; therefore, such surfaces do not necessarily indicate tectonic shearing.

All the cores from the holes in the flood plain exhibit flat and shallow-dipping open jointing that has developed from the upward relaxation of the structureless, massive porphyry bedrock as the river valley was eroded. Where such relaxed surficial joints are intensely developed, as beneath the now-covered gulley in the bedrock, weathering has further weakened the rock so that in some holes it has been cored as rubble. It is in such holes that this material was interpreted as possibly the result of shearing; however, there is little significant evidence in the cores of vertical or near-vertical shearing or fracturing that would indicate the existence of a nearby steep fault.

All indications from the trenches and the drill core photos along the selected axis of the dam are that the foundation rock beneath the dam is devoid of significant fault or fracture zones.

3.4.2 Active Faults

Because of the proximity to the west of the active Wasatch fault, and the widespread existence of Quaternary faulting in this portion of the Intermountain seismic belt, it has been a prime concern of the Bureau's investigations of the Jordanelle Damsite to locate any surface traces of possible active faults at or near the damsite. These investigations, including extensive trenches, have been definitively successful in establishing that movements on all of the faults exposed on the immediate abutments of the site are older than or contemporaneous with intrusion of the andesite porphyry foundation rock. (See Section 4.2 regarding displacements older than 100,000 years on the nearby Bald Mountain fault.)

The existence of a buried channel and discontinuous zones of shearing beneath the flood plain at the damsite raised early concern that a major shear or fault might be concealed beneath the flood plain. It has, for example, been postulated that a north-south active fault could possibly exist, by projection, beneath the flood plain, along the axis of the river. Site evidence based on the existing drill hole and mapping data argues against the presence of any such fault or shear as a reflection of late Quaternary faulting. There is no indication from the dense distribution of drill holes throughout the flood plain at the site that a major offset exists at the contact between the porphyry and the volcaniclastic rock. More significantly, the cores from the holes across the flood plain along the selected axis show virtually no indication of steeply

dipping shearing or fracturing. Since these holes are so closely spaced, any (active) fault would have to be essentially vertical to pass through the present curtain of holes without being intersected. With the present distribution of holes there are only a few narrow gaps within which such a fault could fit. As shown in approximate locations in Figure 1 accompanying this report, only about three new angle holes (totalling about 1000 feet in length) would close off this gap completely and should establish with confidence, prior to stripping of the dam foundation, the existence or non-existence of any fault through the dam axis beneath the flood plain.

Because vertical faults are not the norm for the present regime of active faulting in this part of the Intermountain Region, and because the present drill hole evidence indicates that only a vertical fault could pass through the drill-hole curtain, it is unlikely that an active fault exists beneath the flood plain at the dam axis. In any case, the drilling of holes, such as shown on Figure 1, should settle this issue at the pre-excavation stage, providing that core recovery is satisfactory. The holes would also provide valuable information regarding bedrock excavation and grouting necessary beneath the core trench.

3.5 Foundation Treatment

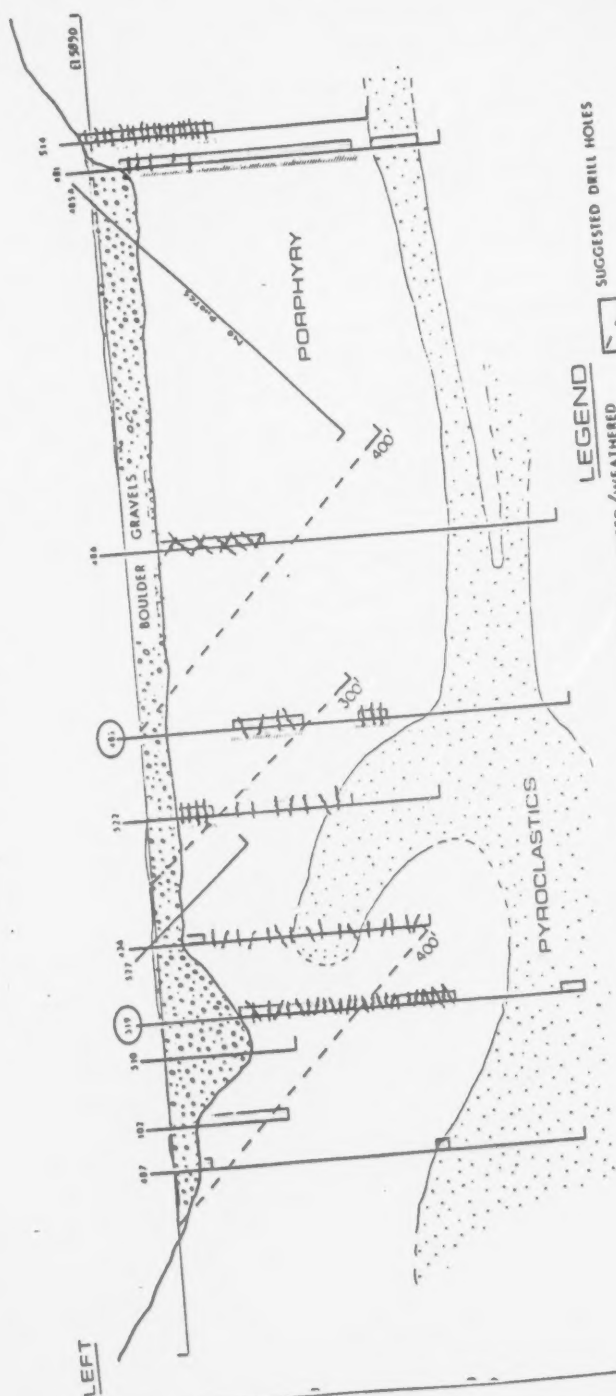
3.5.1 Excavation

Possibly all of the saprolite (soil-like strongly weathered rock, Type III), and much of the moderately weathered rock (Type II), will have to be removed from the core trench of the embankment dam and the foundation of the RCC position. None of the rock, except some of the saprolite (Type III), will need to be excavated beneath the embankment dam shells.

SECTION ACROSS FLOOD PLAIN

RIGHT

LEFT



LEGEND

OXIDIZED/WEATHERED



VERY BRON'N CORE



FRACTURES IN CORE



Actual dip.

USBR 'Sheared' core.



SUGGESTED DRILL HOLES



1 IN. = 100 FT.

FIGURE 1

Indications from the present trenches, outcrops, and drill cores suggest that some foundation excavation may be required near the crest of the dam on both abutments, with possibly more on the left abutment where the RCC is proposed. The foundation rock excavation that will be necessary beneath the flood plain appears from the drill cores to be minor, although it could be significant in the vicinity of the paleochannel next to the left abutment.

The next phase of investigation of the selected axis should include short probe drill holes, pits, or backhoe trenches on the abutments to define the depth of soil and saprolite in order better to establish excavation requirements.

3.5.2 Consolidation

Hard rock, no matter how closely fractured or weathered along fractures, as long as the fractures are not clay-filled, can be consolidated by water flushing and cement grouting to restore its modulus and impermeability sufficiently to render it a suitable foundation for the core trench or the RCC. It is common on projects in weathered rocks, such as at Jordanelle, to do excavation and consolidation testing on panels of such rock in the abutments well before construction in order to aid estimates prior to bidding. This could be done on either abutment or Jordanelle but would be most useful on the left abutment where the RCC portion is proposed.

3.5.3 Curtain Grouting

Aside from the consolidation or blanket grouting referred to above, it will be necessary to install a grout curtain along the full length of the dam proposed for Jordanelle.

Photos of the drill cores suggest that the grout take for such a curtain should be relatively low and that the results

will be satisfactory, since both the porphyry and the volcaniclastics are in uniformly, sparsely jointed, hard rocks with no evidence of voids, clay surfaces, or breccia zones along the line of the grout curtain.

It is recommended that grouting tests be done along the proposed axis prior to construction. These tests should be done with normal cement and relatively thick mixes. Water tests are not diagnostic for grout curtain estimates.

3.6 Tunnelling Conditions

The proposed waterway tunnels will be excavated in andesite porphyry in the left abutment. Although some rock-mass classifications indicate otherwise, the character of these rocks, as exposed in the outcrops, trenches, and drill cores, strongly suggests that they will provide good to excellent conditions for conventional drill-blast excavation. In all likelihood little support other than rock bolts "as required" will be necessary in most of the tunnels to be excavated. Any type of rock bolt (mechanical, cemented, swellex, etc.) would be satisfactory in this rock to provide support prior to lining. Permanent structural bolts must be grouted.

4. SEISMOTECTONICS

4.1 General Remarks

The purpose of this section is to present an evaluation of investigations and interpretations made by the Bureau of Reclamation relating to the regional seismotectonic setting and the site geology of the Jordanelle Damsite with specific focus on the Bureau's current seismotectonic conclusions. The evaluation relies, in part, upon general perspective extensively developed in the 1982-83 consultant review report.

Three seismotectonic issues of primary importance to dam safety are: (1) the potential for future surface displacement on faults at or close to the dams site, (2) the identification of seismic sources and corresponding maximum credible earthquakes (MCE's) relevant to design ground motions for the dam, and (3) the potential for reservoir-induced seismicity. These issues are addressed consecutively in following subsections. Another subsection then presents discussion of design ground-motion considerations for the site.

Results of extensive field investigations carried out by the Bureau subsequent to the 1982-83 consultant review have led to a dramatic revision of perspective on seismic hazard at the dams site - especially regarding potential rupture on foundation faults. Extensive trenching and geological mapping on the right abutment, additional drilling across the dam foundation beneath flood plain deposits, and completion of subsurface geophysical profiling and detailed seismic geology studies in the vicinity of the dams site have combined to resolve a host of issues that were problematical at the time of the 1982-83 review. Accordingly, some preliminary site-specific assessments made during the 1982-83 consultant review (Arabasz and others, 1983), based on information then available, are now obsolete.

With one exception, the Bureau has pursued and completed all investigations suggested by the 1982-83 consultant review for addressing seismotectonic issues. The exception, discussed below in Section 4.4, was a recommendation to compile background information relevant to the potential for reservoir-induced seismicity. (An incomplete draft of such an investigation by Bureau staff apparently was not included in the current Technical Summary Document.)

Completion by the Bureau of its "Regional Seismotectonic Study for the Back Valleys of the Wasatch Mountains in Northeastern Utah" (Sullivan and others, 1986), has provided an invaluable and, indeed, critical basis for assessing the seismotectonics of the Jordanelle Damsite. Without that study, the Group's understanding of the neotectonics of the Wasatch Hinterland would be so incomplete that far more conservative positions would likely have to be adopted for seismic potential at the Jordanelle Damsite.

There is a high level of public awareness of earthquake danger in the Utah region. Indeed, such awareness has been deliberately fostered by federal and state government as part of a long-term program of earthquake hazard mitigation in the area. With specific regard to the Jordanelle Damsite, intervenors have questioned whether a safe dam could be built at Jordanelle. Despite affirmative answer to that question by the 1982-83 consultant review, emotional public response in the past to the issue of seismic safety of a Jordanelle Dam makes it likely that such concern will persist. Therefore, arguments for the seismic safety of a Jordanelle Dam must be capable of withstanding intense technical scrutiny at any stage.

4.2 Potential Surface Faulting

Foundation Faulting. The Group concurs with the conclusions reached by Bureau geologists that the foundation and abutments of the Jordanelle Damsite can be considered free of faults and shears that would pose a potential for expectable coseismic surface faulting. There appear to be no faults or shears with evidence of displacements that would represent continuation to the surface of planes of rupture on which seismic slip has occurred at depth during late Quaternary time. Thorough and adequate efforts have been made by Bureau geologists to address this issue.

Extensive exposure, mapping, and study of the bedrock geology above and downstream of the right abutment have provided detailed evidence that faulting and shearing at the damsite were related to emplacement of the Mayflower and Jordanelle stocks about 36 to 41 million years ago. Further, displacements on these faults and shears appear to have ended prior to late Cenozoic time, and there is no indication of reactivation of these structures during late Quaternary time. On the basis both of documentation of this evidence and field inspection of key geological exposures, the Group finds the evidence compelling. This includes consideration of all four main zones of faulting described in the Technical Review Document: (1) the Cottonwood fault, (2) the F-series faults near the right abutment, (3) the SZ1 and SZ2 shear zones on the margins of the Jordanelle stock on the west side of the Provo River, and (4) discontinuous zones of shearing found in drill holes within the Jordanelle stock beneath the flood plain close to the dam axis.

Concerns at the time of the 1982-83 consultant review regarding possible faults concealed by the Provo River flood plain at the damsite have been adequately addressed by

subsequent exploration efforts. Evidence has been documented for refuting earlier interpretations for existence of the so-called F-10 and F-12 faults, and a significant buried channel below the eastern portion of the flood plain has been shown not to be fault-related. As discussed in Section 3.4.2, there is still some possibility that a fault may be concealed beneath the riverbed gravels. The additional drilling discussed in Section 3.4.2 would add confidence to the Bureau's interpretation that no such structure affects the foundation. Ultimately, excavation of the dam foundation will provide certainty whether any such structures exist, so the issue will not remain unresolved to compromise the safety of a constructed dam. We see no reason for reservation in accepting the current interpretations.

"Late Quaternary" faulting and the Bald Mountain fault.

The Bureau has concluded that "No late Quaternary faults have been mapped in the vicinity of Jordanelle damsite." The modifier "late Quaternary" has a widespread connotation in seismic geology in connection with faulting. To many geologists, the absence of "late Quaternary" displacement implies - rightly or wrongly - that a fault may be considered inactive within a future period of concern to humans.

The Technical Summary Document uses the term "late Quaternary" in a restrictive sense of less than 125,000 years, whereas notable seismic geologists such as R. E. Wallace have used it to encompass "approximately the past 500,000 years" (Wallace, 1981, p. 214). Thus, emphasis in the Technical Summary Document about the absence of "late Quaternary" faulting within 15 km of the damsite may be misleading, and it clouds the issue of identifying potential seismic sources. An important structure within that distance is the Bald Mountain fault, a high-angle normal fault at least 3 km long that trends

N20°E and is located only 2,000 feet (0.6 km) west of the proposed dam, dipping towards it.

Careful trenching studies by the Bureau indicate that the Bald Mountain fault does not displace overlying alluvial deposits of at least 100,000-yr. age. Hence, the Bureau concludes "It should not be considered a potential source for surface-rupture earthquakes." However, the possibility of secondary surface rupture on this fault cannot be precluded - given, by the Bureau's own criteria, its suitable orientation for reactivation in the contemporary stress field.

The Group agrees that the likelihood of a large ($M > 6\frac{1}{2}$) surface-faulting earthquake on the Bald Mountain fault can be considered so remote as to be negligible. From considerations of fault dimensions and seismic moment, arguments can be made that the Bald Mountain fault is too short to be the primary locus of a large surface-faulting earthquake. Significant surface rupture on such short faults would seem feasible only as a result of secondary rupture due to seismic slip on some related larger fault as, for example, in a kinematic pairing of the Bald Mountain and East Kamas faults.

Surface deformation from buried faulting. Separate from an evaluation of the potential for surface faulting accompanying large ($M > 6\frac{1}{2}$) earthquakes, the Technical Summary Document addresses the potential for surface deformation due to slip at depth on a fault that does not rupture the surface. As outlined in this document, seismic hazard in the Intermountain seismic belt includes the potential for moderate-size earthquakes below the threshold for surface faulting, which is estimated to be about magnitude 6 to $6\frac{1}{2}$ in the Intermountain seismic belt. The Group concurs that such earthquakes may occur randomly in map location throughout the main seismic belt in Utah, which encompasses the vicinity of the Jordanelle Damsite,

and that the location of their occurrence may not be predictable from the surface geology. This view is in accord with the historical experience in the Intermountain seismic belt and with the current judgment of seismological researchers.

A phenomenon well known to seismologists - both observationally and theoretically - is that of surface deformation accompanying slip on a buried fault (that is, dislocation on a rupture plane which does not extend to the surface). The Technical Summary Document appropriately calls attention to this phenomenon. Even if coseismic surface faulting can be ruled out from the surface geology, slip on a buried fault may produce a surface deformation that is theoretically calculable (e.g., Mansinha and Smylie, 1971). Observations of surface deformation accompanying moderate-size earthquakes in the Intermountain seismic belt are discussed in the Technical Summary Document, and Stein and Barrientos (1985) provide a useful illustration of theoretical modeling to explain surface deformation accompanying the magnitude (M_s) 7.3 Borah Peak, Idaho, earthquake of 1983.

For slip on a normal fault at depth, the surface displacement field is a function of the inclination of the fault, the geometric extent and depth of the rupture plane, the amount of slip on the fault plane, and the strength and stress-deformation properties of the affected medium. A key result of calculations by means of the mathematical model is the gradient of surface deformation produced by various plausible configurations of buried faulting. Arabasz and others (1981) present data that indicate a vertical deformation gradient of about 2-3 cm per kilometer of horizontal distance across the epicentral region of a magnitude 6 normal faulting earthquake. Depending upon specified slip and fault parameters, a graphical example presented by Mansinha and Smylie (1971) suggests that

a vertical deformation gradient perhaps exceeding 10 cm/km might be possible above an earthquake in the magnitude 6 range.

Information presented in the preceding paragraph leads the Group to judge that the Bureau's conclusion to allow the possibility of "differential displacements approaching 15 cm" on faults and shears in the dam foundation is extremely conservative. The 15-cm allowance is interpreted to correspond to a discrete displacement on an individual fault or shear at the base of the dam.

4.3 Seismic Sources and Corresponding Maximum Credible Earthquakes

On the basis of regional neotectonic studies throughout the Wasatch Hinterland, Bureau geologists have developed an excellent overview of the seismotectonic framework of the broad region within which the Jordanelle Damsite lies. These studies lead to a carefully argued position for maximum credible earthquakes (MCE's) governing ground motions at Jordanelle. As summarized in the Technical Summary Document, these include (1) MCE = $7\frac{1}{2}$ for a large surface-faulting earthquake on the Wasatch fault as close as 30 km to the damsite, and (2) MCE = 6 to $6\frac{1}{2}$ (below the threshold for surface faulting) for a local random earthquake beneath the damsite. The Group is in basic agreement with this position, but some additional considerations are warranted.

Sources for large ($M > 6\frac{1}{2}$) surface-faulting earthquakes. Inasmuch as middle and late Quaternary slip rates for faults in the Wasatch back valleys are about an order of magnitude lower than, say, for the Wasatch fault, the absence of "late Quaternary" displacement (less than 125 thousand years) should not be construed to mean that a fault with known or suspected Quaternary displacement has zero potential for surface

displacement in the near future. The issue is one of very low, but finite, probability of such an event.

There should be explicit discussion similar to that in Section 4.2 on the Bald Mountain fault for not considering the fault zone on the east side of Kamas Valley as a potential source for a large surface-faulting earthquake. This fault zone lies approximately 13 km east of the damsite and is similar to the Bald Mountain fault in having known Quaternary displacement, but no evidence for surface rupture in at least the last 130-140 thousand years.

If the Bald Mountain and East Kamas faults are ruled out as potential sources of large surface-faulting earthquakes on the basis of probabilistic rather than deterministic arguments, the Wasatch fault remains as the primary source zone to be considered for such an event near the damsite. The assigned MCE of $7\frac{1}{2}$ at an epicentral distance of 30 km is appropriate.

Sources of moderate-size ($M < 6\frac{1}{2}$) earthquakes. In considering possible sources for earthquakes below the threshold of surface faulting (taken by the Bureau to have an upper limit of magnitude $6\frac{1}{2}$ in the Intermountain seismic belt), the Technical Summary Document argues for a "random earthquake" hypothesis. In effect, an earthquake with an MCE of $6\frac{1}{2}$ should be considered possible, with random map location, beneath all sites within the back valleys of the Wasatch Mountains including the area of the Jordanelle Dam site. Such a position was taken in the first consultant review report, and this Group considers that position to be valid and appropriate for design considerations at the Jordanelle Dam site. As a practical matter, the Group considers that adherence to the random earthquake hypothesis would obviate the need to define the Bald Mountain fault as a specific seismic source for an MCE of $6\frac{1}{2}$ or less, inasmuch as there is uncertainty about the subsurface geometry and extent of the Bald Mountain fault, and the random model has more conservative implications.

Regarding the focal depth assigned to the random earthquake, the Technical Summary Document discusses the occurrence of magnitude 6 earthquakes as shallow as 6 km in the Yellowstone area, and the magnitude 6.0 Pocatello Valley earthquake which had a focal depth of 8-9 km. Allowance for a rupture-nucleation depth at least as shallow as 8 km would seem to be called for.

4.4 Potential for Reservoir-Induced Seismicity

The phenomenon of reservoir-induced seismicity (RIS) has become the subject of intensive modern study (see reviews by Simpson: 1986, 1976), and there is general awareness of the potential for such seismicity in association with the impoundment of large deep reservoirs. This is especially true in tectonic regimes of normal faulting. This issue was discussed at some length in the 1982-83 consultant review report. Recommendations that hydrofrac measurements be carried out at the Jordanelle site have been followed, and the results (Haimson and Lee, 1985, p. 32) indicate a state of stress conducive to normal faulting and "measured stress magnitudes . . . close to the limit of stability based on a simple model of frictional sliding on properly oriented preexisting fractures."

Because the effects of any RIS in association with impoundment of a Jordanelle reservoir will be less than or equal to those already considered for safeguards against the maximum credible earthquake ground motions, the potential for RIS does not further affect design considerations. Its significance lies in the need for appropriate public awareness, as the Group has noted in Section 4.1. Otherwise, there is a potential for misinformation and undue alarm should any RIS occur, despite its being anticipated and adequately accommodated by defensive design measures.

Compilations of instrumental seismicity since 1974 to date show a notable absence of background seismicity in the immediate vicinity of the Jordanelle Dam site and reservoir area. Any occurrence of small to moderate-size earthquakes there following reservoir impoundment will likely be judged by the public to be causally related to impoundment. In view of the inconsequential impact upon safety of the dam, the Group feels the Bureau has much to gain in terms of public confidence by discussing the possibility of RIS at Jordanelle.

We repeat the recommendations made in the 1982-83 consultant review regarding (1) the systematic compilation by the Bureau of data relevant to RIS in other cases of reservoir impoundment in the Utah region, and (2) the eventual need for public discussion regarding the possibility of RIS at Jordanelle.

4.5 Design Ground-Motion Considerations for Site

Information relevant to design earthquake ground motions for a proposed Jordanelle Dam entered the Group's review in only a cursory way, chiefly through (1) comments made by Perry Hensley, Branch Coordinator, USBR, E & R Center, as part of an oral presentation on conceptual designs, and (2) a brief hand-out from Hensley entitled, "Generation of Design Earthquake Motions".

Consideration should be given to various factors that might influence the selection of loading parameters and analysis of dam designs. These might include, for example, effects of large earthquakes with extended sources on different segments of the Wasatch fault (that is, at different epicentral distances) rather than simply at 30 km closest distance. There might be enrichment at greater distances of spectral components critical to the dam response. In some cases, directivity

effects of rupture might conceivably become important. The Spanish Fork segment of the Wasatch fault, for example, is "pointed towards" Jordanelle. For an MCE = $6\frac{1}{2}$ earthquake below the Jordanelle Damsite, will the maximum or the average of the radiation pattern govern?

Consideration should also be given to the selection of appropriate accelerograms for the seismic loading. Whether the composite accelerograms proposed for the Jordanelle design study are appropriate should be scrutinized. Inspection of the composite Kern County/Koyna acceleration record proposed for simulating a Wasatch fault record suggests baseline deviations that might be a result of random digitizing errors which could have a pronounced effect on subsequent analyses.

To achieve the goal of producing a record "with the appropriate characteristics of a near field magnitude $6\frac{1}{2}$ record," it is not evident that records of the 1971 San Fernando earthquake are appropriate or typical, since that earthquake is known to have had a complex source configuration and rupture history. The scaling processes for use of the proposed acceleration records should also be scrutinized.

Consideration might be given to acquiring high-quality acceleration records available for normal-faulting earthquakes such as the $M_s = 6.9$ Campania-Basilicata (southern Italy) earthquake of 1980 (Westaway and Jackson, 1986). According to Westaway (personal communication to WJA, 1986), accelerograms from that earthquake represent the best available data set for a large normal-faulting earthquake. Further, a significant collection of accelerograms from normal faulting earthquakes in the western United States (Borah Peak, Idaho; Logan, Utah; Helena, Montana; Mammoth Lakes, California; Oroville, California) as well as elsewhere in the world (particularly Italy and Greece) is currently being compiled by R. Westaway

of the University of Liverpool and R. B. Smith of the University of Utah. This data set includes approximately 2,000 accelerograms from 80 normal-faulting earthquakes ranging in magnitude from 4 to 6.9.

Inasmuch as the seismic safety of a Jordanelle Dam hinges on the suitability of selected design ground motions, the Group feels that this part of the project warrants special attention. To ensure that the adopted procedures will be capable of withstanding intense technical scrutiny, the Group would think it appropriate to engage the assistance of one or more specialists external to the Bureau.

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5. CONCEPTUAL DESIGN ALTERNATIVES

5.1 Discussion of Alternatives

The axis of the dam was relocated upstream from the position considered in the 1982 appraisal design to take advantage of better foundation conditions. It then became evident that a comparison of two conceptual design alternatives would be worthwhile. One alternative consisted of an all-embankment dam across the entire valley, with outlet works tunneled through the left abutment. The other was also an embankment dam but with a roller-compacted concrete (RCC) gravity section, across part of the left side of the valley, in which the waterways would be incorporated. The latter alternative is referred to in the remainder of this report as the "composite structure."

The Group considers both alternatives to be feasible and notes that, broadly speaking, the cost of the composite structure is estimated to be less than that of an all-embankment structure. Furthermore, incorporating the waterways in the RCC section appears advantageous with respect to dissipating the energy of the spillway flow in better quality rock. For these reasons, the Group believes that the composite structure may be found preferable. In any event, the Group's comments on the variations in design considered by the Bureau for the composite structure are also applicable to the all-embankment dam.

5.2 Composite Dam

The principal features and considerations applicable to the composite dam will be discussed primarily in Sections 5.3 and 5.4. In this section the implications of the interface between the RCC and embankment portions are considered.

The junction of the two types of construction can be accomplished either by providing wing walls on the right end

of the RCC section and abutting the embankment against the wing walls, or by wrapping the embankment around the end of the RCC section. The first procedure, contemplated by the Bureau in the Technical Summary Document, permits a shorter RCC section and allows the cross section or zoning of the embankment portion to be essentially independent of the design of the RCC section. However, the short length of the RCC section and the complications in the RCC placement would probably appreciably increase the unit cost of the roller-compacted concrete. The second procedure would require a longer section of RCC to accommodate the slopes of the wrap-around embankment, but if the zoning of the embankment portion were suitably dimensioned, the downstream face of the core of the embankment could be compacted against the upstream vertical face of the concrete section in a relatively simple fashion. This geometry would favor a near-vertical core in the embankment, although a transition to a more sloping core could be effected if desired. A special detail would be required for connecting the RCC section to the facing of a membrane-faced embankment.

Several geometries have been considered by the Bureau for the embankment cross section. These have a bearing on the adoption of the composite structure, as some would involve complex construction at the interface. They are discussed in Section 5.3.

5.3 Embankment Portion

Two principal types of materials are abundantly available for construction of the embankment portion (or of the entire dam if the composite structure is not adopted). These are the alluvial sands, gravels, and cobbles of the Provo River valley bottom, and the clayey gravels of colluvial origin on terraces or hillsides in the reservoir area. The former are primarily hard crystalline gravels transported from the Uinta Mountains.

Although they are mostly below water table they are close to the site and could be processed to provide filter materials and free-draining gravels, and when unprocessed would probably furnish excellent material for the bulk of a gravel embankment. Cobbles and boulders incorporated in the outer part of the downstream shell would probably eliminate the need for riprap. The Group considers these gravels to be excellent materials for construction of the bulk of an embankment dam.

The clayey gravels in the reservoir area have not been extensively tested. They are conveniently located and are above water table, but the gravel fraction is angular and derived largely from moderately weathered andesite rock which may tend to break down on exploitation and compaction. The deposits also appear to contain extensive lenses of clay. The material can probably be utilized effectively for the core of the embankment. It could be incorporated in the body of the embankment with suitable filter protection to avoid saturation and consequent loss in strength, but without a substantial cost saving the Group believes the latter use would be unjustifiable because of the less predictable behavior of the material and because the volume of free-draining material available for discharge of unexpectedly large seepage, should it occur, would be reduced.

The Group agrees that excellent filter material of any suitable gradation can probably be produced economically by processing the river gravels. Nevertheless, it reiterates that the width of filter zones should preferably be about 15 feet instead of 10 feet inasmuch as construction tolerances may occasionally be violated. Moreover, if filter gradings are excessively broad, segregation cannot be avoided. It would be preferable to use two more uniformly-sized filters if filter requirements can be met only marginally by a single zone.

Several embankment cross sections have been considered by the Bureau. All feature upstream and downstream slopes of 1.5:1 and all consist primarily of compacted river gravel, compacted clayey gravel, or a combination of the two. The suggested water barriers are a concrete upstream facing, a clay upstream facing, or an internal core of clayey gravel.

The design utilizing a river gravel section with upstream concrete facing is a conventional section for a concrete-faced rockfill dam, and the use of compacted gravel in place of compacted quarried rockfill does not call for modification of the proposed slopes. The permeability of the downstream portion of rockfill, one of the favorable features of a conventional compacted rockfill section, will be somewhat less in the gravel dam, but the difference in performance would not be significant. On the other hand, replacement of part of the downstream shell by the less permeable clayey gravel would reduce the permeability and increase the compressibility. Neither of these changes would endanger the safety of the dam, but without a significant economic advantage it would be prudent to retain the advantages of the river gravels.

A similar cross section has been proposed in which the upstream concrete facing would be replaced by a compacted membrane of clayey gravel protected by suitable cover and filters. This construction, within the knowledge of the Group, would be unprecedented for a major dam, although somewhat similar details have been used in canal linings and cofferdams. The Group believes that, although the basic theoretical principles of the behavior of such a membrane may be sound, much more information should be available concerning the mechanical, swelling, and shrinkage properties of the clayey gravels, and a background of precedent on less critical structures should be developed, including test sections, before such a novel design is adopted.

On the other hand, the design including a relatively thin clayey core, protected by filters and supported by compacted gravel shells, is a conventional type of recognized excellent behavior. Again, although clayey gravel could be substituted for river gravels in part of the downstream shell, it would be preferable not to do so in the absence of a clear economic advantage. With the inner core design, it may be necessary to flatten the upstream slope in order to provide adequate factors of safety against static and drawdown conditions; this should be investigated on the basis of realistic values of strength and permeability of the gravels.

Seepage beneath any of the embankment dams will have an upward component into the downstream gravel shell and may tend to initiate migration of weathered particles of the foundation materials. A suitable filter should be placed on weathered foundation surfaces to prevent such movement. The design of the filter should ensure that the filter itself cannot be flushed upward into the overlying shell gravel.

The Group notes that an embankment consisting of compacted river gravels is inherently both resistant to earthquake shaking and accommodating to foundation displacements. With the protection of the core by appropriate filters even displacements of the core would not compromise the safety of the embankment. A slight tendency to experience differential movement would exist during an earthquake at the interface between the RCC and embankment sections of a composite structure, but filters extending across the edges of the contact between the RCC and the core would reliably fill any transitory gap on the upstream side in the same manner as filter material would enter a crack in the core itself. A detailed investigation of the seismic implications of such a wrap-around interface has

recently been carried out by WES and the Sacramento District of the Corps of Engineers for Folsom Dam.

The presently proposed freeboard of 3 feet on the embankment section appears adequate, but could be modified if a Newmark-type dynamic analysis of the finally adopted section should indicate settlements approaching this value.

In all conceptual embankment designs the Bureau has indicated that the alluvial materials in the valley are to be removed and replaced by compacted Zone 4 fill. In view of the difficulty of ascertaining the relative density of the alluvium because of its cobbly and gravelly constituents, this is appropriately conservative in order to minimize settlements and eliminate the possibility of liquefaction. However, the cost of excavating and replacing the alluvium in the paleochannel, and the reasonable likelihood that the old alluvium may be dense, may warrant investigations to determine whether the paleochannel fill could be left in place. The necessary excavation to bedrock in order to establish the core or plinth on suitably examined and treated foundation material will provide an opportunity during construction to examine the character of the paleoalluvium and to make a final decision.

5.4 Roller Compacted Concrete (RCC) Section

5.4.1 General

The RCC section as proposed in the Technical Summary Document has a maximum height of 325 feet with the crest at elevation 6175.4. Its crest length is 535 feet and it is located near the left abutment approximately between Sta. 31+00 and 24+00 with embankment dam section extending to Sta. 36+00 on the left abutment and Sta. 2+00 on the right abutment. In cross section the upstream face is vertical and the downstream face is defined by a slope of 0.7 to 1.0 vertical which intersects

the axis at elevation 6196.8 and results in a crest width of 15 feet.

Although no stability analysis results were reported, the proposed section is conceptually satisfactory and consistent with designs used for the static and dynamic loading conditions anticipated at Jordanelle. The freeboard provided by the upstream parapet wall is consistent with usual practice for concrete dams.

As currently conceived, a large retaining wall is located along the intersection of the RCC section and the right side embankment. The wall is required to retain the downstream embankment and prevent it from encroaching on the spillway chute located on the downstream face of the RCC section. From a constructability point of view, placement of the RCC could be simplified by extending the RCC section sufficiently to the right that the embankment wrap-around would not encroach on the spillway. This would eliminate the need for the wing wall.

The embankment portion at the left end of the RCC section is only about 500 feet in length. Since the andesite porphyry rock on which the proposed RCC section is located continues up the left abutment and appears to be sound, both the design and construction would be simplified by extending the RCC section to contact the left abutment, thereby replacing the relatively short embankment section. This simplifies the design by eliminating one embankment/concrete interface and facilitates placing RCC by spreading out the working area, eliminating a time consuming bottleneck, and separating dissimilar types of construction activities. If the impervious core/RCC interface detail as discussed in Section 5.3 is adopted, then the 0.25 horizontal to 1.0 vertical batter at the right end of the RCC section could be eliminated.

A pad to reduce the foundation bearing pressure and increase the shearing resistance along the concrete-to-rock contact is a proven design concept. The Group understands that the need for and the dimensions of a foundation pad will be determined during final design on the basis of shear strength data from laboratory tests on the concrete/rock interface. The pad geometry can be optimized by using a finite-element analysis and the foundation properties determined from cores taken near the finally selected line of excavation. Although little detail was presented to the Group describing methods of analysis or the foundation blocks studied, it was stated that the stability of the foundation had been checked and found to satisfy Bureau safety factor criteria according to Engineering Monograph No. 19. The shear strength data provided was for five andesite-porphyry samples taken from DH-425 near the base of the left abutment. In preparation for final design, it is recommended that additional core samples be taken from other drill holes along the lengthened RCC section alignment and be tested for shear strength. The foundation stability studies already completed should be checked using the expanded data base, and the foundation beneath the lengthened RCC section should also be examined carefully.

5.4.2 Aggregates

The RCC aggregate source is Borrow Area G, located just upstream of the dam in the flood plain alluvium. The materials report suggests that the sand fraction will be supplemented with crushed andesite-porphyry or imported sand from nearby commercial pits. Special care in using the andesite-porphyry is advisable because of its extreme variability at the site. Laboratory tests to determine the soundness of the sand from crushed andesite-porphyry should be conducted as part of the

final evaluation. The mix design investigation, yet to be performed, will also help in determining the most appropriate sand source.

5.4.3 Foundation Treatment

The foundation treatment beneath the RCC section proposed in the Technical Design Summary calls for consolidation and curtain grouting and a drainage curtain downstream of the grout curtain. This is common practice for gravity dam foundation design and the Group concurs with it in concept. Thus far the Bureau indicates that no foundation beneficiation is required to provide additional margins of safety for sliding stability.

The depth and shape of the specified foundation excavation surface are important aspects of the final design. Because the gravity section is to be constructed using RCC construction methods, it is essential that the foundation contact be smoothly varying with no sudden or sharp breaks in slope. The absence of vertical contraction joints common in typical block construction used for conventional gravity dams emphasizes the need to avoid points of stress concentration at the dam foundation interface. The beneficial effects of the proposed foundation pad and consolidation grouting should also be considered when selecting the required depth of foundation excavation.

In the highly improbable event of displacements of the foundation, during an earthquake, in the range of those previously discussed in Section 4.2, the RCC section might experience distress from having to bridge over the displacement. However, a gravity section can accommodate foundation movements of this magnitude without compromising its safety.

5.5 Waterways

5.5.1 General

The waterways proposed for the Jordanelle Dam consist of a spillway, a low-level outlet, and a selective level outlet. For the embankment dam alternative the waterways would all be situated in tunnels located in the left abutment. For the composite dam alternative, the waterways would be located in the RCC section. Conceptually, the Group finds the types of waterways proposed for both alternative dam types satisfactory. Relocating the tunnel waterways in the higher quality rocks of the left abutment for the embankment alternative was a prudent decision. The Group also concurs in using tunnel waterways to avoid the large fill loads on cut and cover structures through the embankment alternative. The economic advantages of locating the waterways in a RCC section were demonstrated emphatically by the comparative cost estimates presented in the Technical Design Summary.

The more detailed discussions of each waterway that follow are focused on the RCC alternative consistent with the Group's position that the composite dam may be the preferred alternative.

5.5.2 Spillway

The spillway proposed for the RCC section is an uncontrolled overflow ogee crest at elevation 6166.4, a crest length of 275 feet, a converging stair-stepped chute on the downstream face of the gravity section, a 100-foot wide stilling basin and an outlet channel to the Provo River. The spillway capacity is 30,800 cfs at a maximum water surface elevation 6175.4. A spillway of this type was designed and successfully model tested for the Bureau's Upper Stillwater Dam and is currently under

construction. It is an appropriate design for this application, and the Group endorses the plan to perform model studies to optimize the final design.

5.5.3 Low Level and Selective Level Outlet Works

The low level outlet works currently proposed are intended to provide reservoir evacuation capability according to the Bureau guidelines contained in ACER-Technical Memorandum No. 3, "Criteria and Guidelines for Excavating Storage Reservoirs and Sizing Low-Level Outlet Works". The low level outlet works for the composite alternative are located on the left abutment in an excavated cut and consist of an intake structure, a 96 inch diameter pressurized steel outlet pipe encased in concrete beneath the embankment and through the RCC section. The selective level outlet works consist of a multilevel intake structure on the upstream face of the gravity section and a 96 inch diameter steel outlet pipe. Fixed cone valves on both outlets are located in the control house to dissipate energy. For the embankment alternatives, the low level outlet works are located in a 12-foot diameter, concrete-lined tunnel in the left abutment from the intake structure to a gate chamber located at the dam centerline. From there, it merges with the selective level outlet works and continues as a 120 inch inside diameter steel pipe inside a 15 foot diameter concrete conduit to a control house and downstream stilling basin.

The Group reviewed emergency reservoir evacuation time requirements set out in ACER Technical Memorandum No. 3 and understands the need for rapid drawdown capability for the upper elevations of the reservoir. The selective level outlet works can be designed to provide the necessary evacuation capacity for the majority of the reservoir volume down to elevation 6030. After the reservoir water surface is reduced to elevation 6030,

however, a cursory review of the reservoir area-capacity curve indicates that only approximately 60,000 acre-feet of storage remain. This is equivalent to a flood of between a 1-in-5 and 1-in-10 year frequency at the damsite on the Provo River with a 15 day volume of approximately 60,000 acre-feet, accepting the fact that the peak discharge values would differ. Implicitly, the risk to downstream property and life are significantly reduced when the reservoir is at or below elevation 6030. Therefore, the governing evacuation requirement from ACER Technical Memorandum No. 3 shifts to the right in Table 4, with resulting much longer evacuation times and, subsequently, a reduced size of low level outlet works.

From another perspective, an examination of the estimated costs for the outlet works shows that the portion allocated to the low level outlet works for the embankment alternatives are about \$3,500,000, and for the composite approximately \$3,000,000. In spite of the fact that a low level outlet partially satisfies minimum downstream flow release requirements and provides diversion, it may be appropriate to revise the outlet works scheme. For example, a revision of the intake portal elevations of the selective level outlet works may accommodate the combined needs of minimum downstream releases and evacuation of the reservoir to a safe level, although not total evacuation, thus eliminating a low level outlet altogether. If the central core alternative is selected for the embankment portion of the dam, there is no need to inspect a toe slab associated with the decked embankment alternatives.

With the downstream hazard posed by the bottom 60,000 acre-feet of storage being no greater than the current 1-in-10 year flood volume for the existing river, and the need for toe slab inspection eliminated, the requirement for total reservoir evacuation becomes virtually a moot point.

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If a low level outlet remains part of the design, and if the composite alternative with a wrap-around interface is pursued, then the intake could be relocated to the upstream face of the gravity section, thus eliminating the 450 feet of cut and cover conduit. This is possible because, after the RCC and wrap around sections are extended to the right, sufficient space is available for an approach channel to the intake.

In addition to a cost saving of about \$2,500,000, this revision would also eliminate any potential for cracking of the conduit due to differential movements between the conduit beneath the fill and the RCC gravity section.

6. ADDITIONAL INVESTIGATIONS AND STUDIES

6.1 Field Investigations

1. Investigate the rock quality along the selected axis by pits and shallow drill holes in order to develop an excavation profile for the core trench and RCC foundation.

Drill about three more holes in the flood plain, as described in Section 3 of this report, to determine the depths of soil and of groutable rock and to verify the absence of faults in the riverbed section.

2. The clayey gravels may undergo breakdown during excavation, placement, and compaction, with consequent alteration of gradation, density, optimum moisture content, and strength. Test fills would be advisable to ascertain the extent to which breakdown occurs, and the effect on the pertinent properties investigated in the laboratory as indicated in Section 6.2.

3. Execute test grouting prior to construction, as described in Sections 3.5.2 and 3.5.3.

6.2 Laboratory Investigations

1. laboratory investigations of the clayey gravels as potential core material should include the effect on gradation, density, and optimum moisture content of placement and compaction. Appropriate strength tests including those to establish pore pressure coefficients should be performed on samples taken from field test fills or prepared in the laboratory in such a way as to replicate field conditions.

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2. If further consideration is given to an upstream clay-gravel membrane as the principal water barrier, consolidation and swelling characteristics should be investigated as well as the influence of alternate wetting and drying. Shear tests under light ambient pressures should be developed to simulate the conditions controlling the strength of the membrane near reservoir level where the effects of consolidation under seepage pressures would be minimal.

3. Test the sand manufactured from andesite-porphyry for soundness.

6.3 Design Studies

1. Refine cost estimates for the conceptual design modifications suggested in this report.

2. Pursue model computations to evaluate the magnitude of expectable surface deformation gradients arising from slip on a buried fault at depth that may accompany the random MCE of magnitude 6½.

3. Develop more explicit analysis of seismic source zones and MCE's that addresses (1) a policy basis for neglecting the potential for future surface rupture on faults with time since last rupture exceeding 100,000 years, and (2) the seismic potential of the Bald Mountain fault.

4. Complete systematic compilation of data relevant to reservoir-induced seismicity in the Utah region, and pursue public discussion dealing with the possibility of reservoir-induced seismicity at Jordanelle.

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5. Solicit the guidance of one or more strong ground-motion specialists external to the Bureau to deal with the suitability of selected design ground motions.

APPENDIX 1

Jordanelle Dam
Consultant Briefing
September 8, 1986

List of Attendees

<u>Name</u>	<u>Position</u>
Bill Engemoen	Principal Designer, E&R Center, Denver
Perry Hensley	Embankment Dams Coordinator, E&R Center, Denver
John Smart	Chief, Embankment Dams Branch, E&R Center, Denver
John W. Larson	Project Construction Engineer, USBR, Provo, Utah
Richard W. Kramer	Technical Review Staff, E&R Center, Denver
Chuck Cooper	Concrete Dams and Waterways Coordinator, E&R Center, Denver
Dave Hinchliff	Concrete Dams Branch, E&R Center, Denver
Jim Rogers	Supervisory Geologist, Jordanelle Dam
Robert J. Farina	Engineering Geologist, Technical Review Staff, E&R Center, Denver
Jay Henrie	Planning Team Leader, Jordanelle, UPO
Dave Frandsen	Geotechnical and Water Rights Chief, UPO, Provo, Utah
Dennis R. Williams	Project Geologist, Bonn. Construction Office, Provo, Utah
Tim Sullivan	Seismotectonic Section, E&R Center, Denver
Razi Quraishi	Principal Geologist, E&R Center, Denver
N. B. Bennett, III	Chief, Central Geology Branch, E&R Center, Denver
Fred Thompson	Regional Geologist, UC Region
Richard A. Jensen	Branch Chief Design, UC Region
Chad Gourley	Division of Water Rights - Dam Safety
Bruce Kaliser	State Hazard Geologist, UGMS
Walter Arabasz	Consultant
Ralph Peck	Consultant
Glenn Tarbox	Consultant
Doug Campbell	Consultant

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Jordanelle Dam
Consultant Wrap-Up Session
September 10, 1986

<u>Name</u>	<u>Position</u>
Bill Engemoen	Principal Designer, E&R Center, Denver
Neil Parrett	Chief, Division of Dam & Waterway Design, E&R Center, Denver
Richard A. Jensen	Branch Chief Design, UC Region
Fred Thompson	Regional Geologist, UC Region
Gary Dow	Geologist, Provo, Utah
Razi Quraishi	Principal Geologist, E&R Center, Denver
John W. Larson	Project Construction Engineer, USBR, Provo, Utah
Wes Hirschi	Assistant Regional Director, Salt Lake City, Utah
John Smart	Chief, Embankment Dams Branch, E&R Center, Denver
Richard Meyer	Geologist, Provo, Utah
Tim Sullivan	Seismotectonic Section, E&R Center, Denver
Dennis R. Williams	Project Geologist, Bonneville Construction Office, Provo, Utah
Perry Hensley	Embankment Dams Coordinator, E&R Center, Denver
David Frandsen	Geotechnical & Water Rights Branch Chief, UPO, Provo, Utah
Jay Henrie	Planning Team Leader, Jordanelle, UPO
Steve Maxwell	Chief, Division of Geology, E&R Center, Denver
Ben Bennett	Chief, Central Geology Branch, E&R Center, Denver
Richard W. Kramer	Technical Review Staff, E&R Center, Denver
Robert J. Farina	Technical Review Staff, E&R Center, Denver
Chuck Cooper	Concrete Dams and Waterways Coordinator, E&R Center, Denver
Dave Hinchliff	Concrete Dams Branch, E&R Center, Denver
Richard Hall	State Engineer's Office
Bruce Kaliser	State Hazard Geologist
Walter Arabasz	Consultant
Ralph Peck	Consultant
Glenn Tarbox	Consultant
Doug Campbell	Consultant

① Bureau Review
Comments on
RE-

② Ref # 255 - USBR 1960 Feas. Rpt. on Jordanelle Dam
Design for Life

③ Tech. Data Summary.

U. S. Bureau of Reclamation
Engineering and Research Center
Denver, Colorado

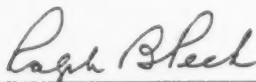
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Bonneville Unit
Central Utah Project

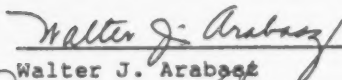
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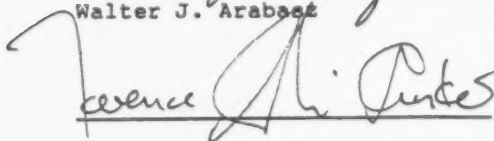
10 July 1988



Ralph B. Peck



Walter J. Arabasz



Terence McCusker

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1. INTRODUCTION

1.1 Consultants' Review

A group of individual consultants, consisting of Walter J. Arabasz, Terence McCusker, and Ralph B. Peck, was engaged under separate contracts to provide professional engineering services to the Bureau of Reclamation for Jordanelle Dam, Bonneville Unit, Central Utah Project, Utah. Specific activities and requirements involved in the services are listed in the Statement of Work appended to each contract. One of the requirements is submittal of a joint formal report. The present report is intended to satisfy that requirement. It is the third of a series of reports by similar groups of consultants. Messrs. Arabasz and Peck were members of all three groups; the other members differed from one group to another. The first report was dated February 1983 and the second 3 December 1986.

The consultants were furnished various documents for their review prior to meeting in Denver and at the site. These documents are listed in the Appendix. Supplementary information was furnished at the meetings.

1.2 Schedule

Messrs. Arabasz and Peck met with Bureau representatives in Denver on April 26, 1988. Messrs. Arabasz and McCusker participated in a site visit on April 27 and presented preliminary comments on April 29 in Denver. Messrs. Arabasz and Peck visited the site on May 11. Sections of the report were prepared by the individual consultants and were coordinated by Peck after reconciliation of any discrepancies by telephone and correspondence.

1.3 Acknowledgments

The members of the consulting Group appreciate the efforts of the members of the Bureau staff who participated in preparation of the documents, in the site visits, and in the presentations and discussions at the meetings. Especially, the Group appreciates the accommodation of the Bureau to the schedule adjustments necessitated by the inability of the consultants to meet at a single time.

2. SUMMARY AND RECOMMENDATIONS

2.1 Embankment Design

The Group agrees that, in consideration of the routing of the Probable Maximum Flood (PMF), the excellent materials available, and the resistance to seismic events, the best choice of type of dam is an embankment containing a sloping impervious core flanked by gravel shells and protected by downstream filters.

The upstream slope of 2:1 on compacted Zone 4 (natural alluvium) materials is conventional. The core width, affording a hydraulic gradient of about 3 in excellent material, is appropriate. The processed filter and drain materials are suitably dimensioned. For added protection against seismic opening in the bedrock, a downstream fillet is suggested at the base of the filter, Zone 2. The downstream slope of 1.5:1, although not customary for embankment shells of gravel, is considered to be conservative with respect to static stability and, as indicated in Section 5.4, to dynamic stability as well.

Suggestions are made for foundation preparation to cope with the various rock conditions disclosed by the Stage I cleanup. Particular attention is directed to the grus zones associated with the rock knobs on the right abutment, the overhanging steps on the left abutment, and the rock block slide at the downstream edge of the left abutment. Detailed cross sections are needed to permit assessment of the measures needed to cope with these conditions.

The site is favored with excellent construction materials. To the greatest extent compatible with economy, the random zone in the downstream shell should be minimized. Segregation in Zone 3 could be reduced if the maximum size were reduced from 12 to somewhere between 8 and 10 inches.

2.2 Seismotectonics

Within the limits of achievable scientific and informational certainty, potential deformation of the foundation from earthquakes is considered to be negligible and non-threatening to a properly designed embankment dam. Furthermore, appropriate parameters of potential seismic loading have been well specified for conservative design.

As a result of extensive efforts by the Bureau's Seismotectonic Section, current understanding of seismotectonic factors relative to the siting, design, and construction of a seismically safe dam at the site has evolved to a high degree. Any residual uncertainty is judged to be amply compensated by conservatism in design and construction. The understanding of the seismotectonic framework in the region of Jordanelle Damsite is considered to be as complete as is currently achievable. Assurance comes from extensive overlap of the Bureau's program with a major program of focused research on earthquake hazards in the Wasatch Front region sponsored by the U.S.G.S.

Completion by the Bureau of the program of angle-hole drilling and coring beneath the floodplain, proposed by the 1986 Consultant Group, reinforces the conclusion that the proposed foundation and abutments can be considered free of faults and shears that would pose a potential for expectable coseismic surface faulting.

Some residual uncertainty exists with respect to the orientation and minimum dimensions of faults susceptible to minor secondary vertical displacement (less than 15 cm) due to slip on a buried fault at depth. There are no adverse consequences of this uncertainty, inasmuch as the dam is designed to accommodate the specified slip on fractures of any geometry.

Although recent studies have concluded that future Wasatch Front earthquakes could have surface wave magnitudes of up to 7.5-7.7, the Bureau's MCE of a surface wave magnitude of 7.5 is well supported, and the slight (0.01) probability that this value might be exceeded is amply accommodated by conservative allowances made by the Bureau in its dynamic analyses and in the design.

The selection of an embankment dam (the most forgiving type of dam), as well as excavation of the foundation to expose bedrock and postulation of a random earthquake of magnitude 6 to 6.5 directly beneath the dam, all provide assurance that the dam will remain intact even if foundation displacements should be greater than those specified.

Logic requires that the consequences of a 15-cm foundation displacement be considered on any fault that might be disclosed by excavation, irrespective of the direction or location of the fault. The design, in fact, provides for such movements.

The Group judges that the Bureau has adopted an appropriate and credible approach for quantifying the probability of reservoir-induced seismicity. Comparison with a world-wide database suggests the probability of RIS at Jordanelle to be about 6 to 7 percent. The residual uncertainty has no adverse consequences because maximum influences of any RIS will not exceed defensive design measures already being implemented to ensure safe seismic performance of the dam.

2.3 Design Ground Motions and Dynamic Analysis

The Group has confidence in the procedures used by the Bureau to select appropriate earthquake loading parameters and to calculate the corresponding deformations of the dam. As

these procedures were presented somewhat informally to the Group, they will need to be documented.

The Group concurs with the Bureau's premise that the ground motions to be expected from future normal-faulting earthquakes will not differ significantly from those produced by thrust faulting or strike-slip faulting. Accordingly, ground motion parameters corresponding to the MCE's and estimated from published relationships are judged to be appropriate for the Jordanelle site.

The Group is favorably impressed by the Bureau's conclusion that velocity spectrum intensity is an important index for evaluating the response of a gravel embankment dam.

The three design earthquake accelerograms selected for the deformation analyses are appropriate and conservative. The results of such analyses for all three earthquakes, for downstream slopes of 1.5:1, 1.75:1, and 2.0:1, should be documented. The methodology for calculating the loss of freeboard is well established. The Group anticipates that the computations and results will be documented.

Although the loss of freeboard decreases appreciably for any one of the design earthquakes as the downstream slope is flattened, even the loss for a 1.5:1 slope leaves a substantial margin against overtopping. Hence, the Group believes that this slope, although bordering on precedent for a gravel dam, as indicated in Section 3.2.5, is conservative and constitutes a timely advance in the art of embankment dam design.

2.4 Waterways

The variety of geologic structure, involving eight structural domains in the left abutment, inevitably leads to uncertainty in projection of the surface mapping to tunnel

depth. Several structural zones (ST) have been identified having the appearance of wide, weathered regional joints containing disaggregated grains of coarse sand size. The zones are likely to be permeable and erodible. They are not simple geometric features that can be projected with certainty to large distances from exposures or drill holes.

Extensive work has been done on the identification of joint sets and their potential for producing rock failures. Although for practical purposes the joint domain in some areas may be considered random, identification of potential failures is useful, especially in the gate chamber.

Rock mass classifications, useful as they may be for predicting the kind and amount of support likely to be installed in a given situation and for providing a basis for estimating construction cost, generally lead to unquantifiably conservative results. This situation should temper their use for design.

Structural Zone ST-2 appears to project close to or along the line of the tunnel excavation. On the assumption that ST-2 is several feet wide and is filled with soil-like materials that may constitute raveling or running ground, the difficulty and cost of coping with these conditions in a mixed face that includes rock may be very great. The potential for loss of control of the heading is considerable. Although projections of ST-2 on the basis of present information may be questionable, the Group believes that it would be overoptimistic to assume that the feature may not be encountered or that it may be innocuous. Further consideration should be given to additional exploration, to realigning the tunnel so as to cross rather than parallel the feature, or both.

Ensuring the stability of the walls and roof of the gate chamber and access shaft will depend on identifying specific areas of risk and the size of unstable blocks. Suitable

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support systems should be available for use as indicated by mapping in the excavation. Use of a rock mass classification system under these conditions is inappropriate. Where ST-3 intersects the chamber, it will be necessary to prevent raveling from the zone as well as to stabilize associated rock blocks.

Consolidation grout cannot be relied on to make the structural zones in or near the tunnels uniformly strong or equivalent to the undisturbed rock mass, but it could be used to reduce local water inflows. Around the access shaft, grouting of ST-3, if practicable, may improve its mechanical properties, but reduction of inflows may not be worthwhile because the flows are likely to decrease rapidly.

The possibility of eliminating reinforcement in the tunnel lining should be considered.

Detailed design by the Bureau of the initial (external) tunnel support, while recognizing that this support has a load-carrying function in the completed structure, may reduce the contractor's responsibility to provide a safe working place and may restrict his use of cost-saving items.

For the rock conditions at the site it may be preferable to apply the first layer of shotcrete in the tunnels before rock bolts are installed. Mesh and additional shotcrete can then be placed as needed.

The seismic displacements postulated for design will not cause the outlet works to become inoperable to the degree that flow could not occur.

To the extent that NATM implies use of shotcrete, rock bolts, and related technology, the method is considered acceptable. Subdivision of the ground into classes to be agreed upon by the engineer and contractor, each class with its

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support and price, involves cooperative decision-making difficult to accomplish under the U.S. contracting system and is not recommended.

The Group recommends that the specifications be drawn to permit the maximum flexibility in the contractor's construction methods and sequence consistent with the objectives of the project.

3. DESIGN

3.1 Selected Alternative

Among the conceptual designs discussed in the Joint Report of 3 December 1986, the choice has been made to proceed with an embankment dam containing a sloping impervious core flanked by gravel shells and protected by downstream filters. The need to pass water over the dam itself has been eliminated by increasing the height of the dam to store most of the PMF and by providing an emergency spillway beyond the left abutment to pass the remainder. This arrangement reduced the attractiveness of the use of roller-compacted concrete for a portion of the dam.

The Group looks with favor on this choice. Excellent materials are available for an embankment dam; the possibility of foundation displacements can be readily accommodated; and the resistance of the dam to seismic shaking is inherently great. The portion of the foundation exposed to date reveals no unanticipated features that, after routine treatment, would be detrimental to the performance of the structure.

3.2 Basic Geometry

The typical section offered for the Group's consideration consisted of an upstream slope of 2H:1V, a crest width of 40 ft, and a downstream slope of 1.5:1. The core slopes upstream with its upper surface at 0.75:1 and its lower surface at 0.5:1. It is backed by a filter, Zone 2, and a drain, Zone 3, each with a horizontal width of 12 ft. The remainder of the downstream shell consists primarily of Zone 4, a mixture of sand, gravels, cobbles, and boulders from the riverbed deposits. In the event that insufficient Zone 4 material is economically available, a random zone, 4A, may be included within the downstream shell; it would consist for the most part of

clayey gravels similar to those in the core, Zone 1. If the random zone is used, it will be surrounded by Zone 4 materials. The foundation will be stripped to the extent that the embankment will everywhere rest on bedrock, although a decision might be made to leave part of the downstream shell on riverbed gravels, should they be judged suitable after exposure, in the deep bedrock channel.

Several features of the geometry will be discussed in the following subsections.

3.2.1 Upstream Slope and Shell

The upstream slope of 2:1 on compacted Zone 4 materials is within precedent. Its stability during rapid drawdown is to be enhanced by placing the materials in such a manner as to develop a horizontal stratification with pervious layers that will encourage rapid drainage. This is an effective technique that has been used successfully on several dams.

3.2.2 Core

The upstream-sloping core has a horizontal width equal to approximately one third the hydraulic head, H . This is a conservative width, decidedly preferable to that of a thin core with a thickness as small as $0.2H$ (one of the options studied), inasmuch as it provides ample margin for displacements due to any cause, such as settlement or seismic shaking, and it reduces the likelihood of throughgoing cracks. As an added insurance, it is suggested that the core material be placed at a water content slightly wet of optimum for compaction at 99% Standard Proctor density, to ensure that the core will be as plastic as possible without encountering placement difficulties. In this respect, it appears that the borrow materials, which contain lenses or layers of relatively

plastic fines in masses of clayey gravels, should be excavated in a manner that promotes the greatest practicable mixing.

3.2.3 Filters and Drains

The downstream filter, Zone 2, and the parallel drain, Zone 3, are shown as extending at constant width from top to bottom of the core. It would be preferable to enlarge Zone 2 as it approaches the bedrock surface, possibly to a width of some 30 to 40 ft in the lower 40 ft, to form a fillet of granular materials with a maximum size of 3 inches, against which the Zone 3 gravels and cobbles would be placed on the downstream side. The function of this enlargement would be to supply coarse particles that would wedge into any fissure that might open in the event of an earthquake. The coarsest particles would be expected to bridge over the opening or wedge into it, to develop a filter of smaller particles, and thus to protect the core. Inasmuch as the maximum opening compatible with the most pessimistic interpretation of the seismic conditions is considered to be about 6 inches (15 cm.), it may be appropriate to exclude sizes larger than 6 inches from the Zone 3 materials in the lower few feet next to bedrock. It may be noted that this arrangement is similar to that utilized in Los Angeles Dam, designed to replace the Lower Van Norman Dam, damaged in the 1971 San Fernando earthquake, where large displacements were postulated.

In the valley bottom, the free-draining Zone 3 should be continued from the base of its inclined portion as a drainage blanket to ensure that water bypassing the core for any reason could be discharged without building up pore pressures in the downstream shell, Zone 4. The blanket downstream from the fillet should be separated from the bedrock by a

sufficient thickness of Zone 4 to guard against piping of fines from the rock into the blanket.

3.2.4 Downstream Shell

Zone 4, which may be locally less than free-draining, is to be placed in such a way as to encourage stratification, and thus to enhance drainage, as in the upstream shell. It would be preferable not to do this, as seepage may emerge in horizontal wet spots on the downstream face. Such seeps developed on Vermilion Dam in California; they did not impair safety, but their appearance caused enough apprehension to warrant the owners to provide a downstream pervious cover. Moreover, if Zone 4A is included in the downstream shell, it will effectively block the intended horizontal seepage. The suggested drainage blanket to provide an outlet for seepage into Zone 3 is a preferable detail.

3.2.5 Downstream Slope

The typical section proposes a downstream slope of 1.5:1. This is unquestionably a stable slope under static conditions for the excellent sandy gravels that will constitute the shell. There are few precedents for this slope, however; most comparable dams of similar materials are built at slopes in the range of 1.75:1 to 2.25:1. On the other hand, rockfill dams are often built with slopes as steep as 1.375:1 and, if concrete-faced, even as steep as 1.25:1. Inasmuch as a well graded gravel is as stable as rockfill and is appreciably less compressible, it should be regarded as a superior material. The reason for this disparity in practice probably resides in the old but successful practice of dumping rockfill without compaction and allowing it to assume its angle of repose (about 1.25:1). On the other hand, earth-dam construction,

which always involved placement in layers, developed from a perspective of flatter slopes, a perspective that classified gravels as earth fill. The Group commends the designers for breaking from an ultraconservative tradition, and considers the downstream slope entirely suitable to withstand all static and seepage conditions, as indicated by the stability calculations that have been carried out. (As a precedent, it may be noted that the downstream upper 140 ft of the 800-ft Mica Dam were sloped, in gravel, at 1.5:1 when the decision was made to widen the crest to reduce the potential for damage by an overtopping wave.)

The Group believes that the suitability of the downstream slope of 1.5:1 for Jordanelle Dam should be judged on the basis of the stability of the slope and potential loss of freeboard under the seismic conditions postulated for the site. This is discussed further in Section 4.4.

3.3 Foundation Preparation

The foundation conditions exposed to date are generally in keeping with those expected, and the approach to foundation preparation discussed in the Group's report of 3 December 1986 remains applicable. Specifically, use of filter material above weathered rock beneath shells, filters, and transitions is appropriate.

In detail, however, the different areas of the foundations and abutments present quite different characteristics requiring variations in foundation treatment from place to place. Many decisions will have to be made in the field as the work progresses, but they should be governed by consistent guidelines. We offer the following suggestions:

The exposed river bottom between the deep channel and the right abutment is a relatively flat expanse of generally

sound rock, locally very closely jointed. The joints are tight and result in a rock surface with many irregularities of a few inches or so. Such a surface is ideal for core contact with virtually no preparation. Slush grouting is needed only where joints appear open. Core material slightly wet of optimum moisture content can be placed directly on the rock and rolled into the irregularities by the wheels of loaded trucks. Occasionally a local depression a few feet deep is present; such a depression, usually bounded by joint planes, should be treated by filling it with dental concrete before core material is placed. Blanket grouting of the core-control area will result in grout accumulations on the rock surface. These should be minimized as far as practicable and large accumulations should be removed. The contact area should then be air-cleaned before placement of the first fill. This procedure is preferred to a slush-grout cover over the whole area before blanket grouting, as such a cover tends to be brittle and may crack when foundation deformations occur as the embankment rises.

Where sand-like weathered rock (grus) is encountered in the core-contact area, a few inches should be removed and replaced promptly by slush grout or dental concrete; seepage passing through the grus will thereby be kept from contact with the overlying core. Elsewhere, and especially downstream from the core contact, the weathered material should be covered by filter material sized to retain the sand-like material.

The right abutment area is characterized by several large knobs of resistant rock between which existed weathered material that was removed by rippers and dozers. The incorporation of the rock knobs into the embankment is not regarded as undesirable in itself, as long as the slopes of the sides of the knobs are not steeper than, say, 1H:2V. However, two

aspects require attention. A series of cross sections perpendicular to the axis of the dam is needed to permit visualizing the relations between the knobs and the core, in order to ensure that the geometry and minimum thickness of the core are suitable. Furthermore, the geometry of the weathered zones between the knobs must be defined. If grus, presumably having the permeability of a sand, passes from upstream to downstream below foundation level between knobs and is in contact with the reservoir, it will constitute a throughgoing permeable path that may require local modification of the core geometry and possibly blanketing the outcrop of permeable material in the reservoir. The origin of the weathered zones suggests that they are not likely to be extensive uninterrupted linear features, but the possibility should be investigated in detail as the cleanup progresses and geologic mapping is facilitated.

The left abutment presents the need for a markedly different type of surface treatment from that elsewhere. It is characterized by large steps, with dimensions often of several feet, consisting of blocks with near-horizontal and near-vertical faces. At many locations the subvertical surfaces overhang toward the valley. There are numerous pockets bounded by three joint planes. Criteria will need to be developed to cope with these conditions. Broadly speaking, core material should not be placed against vertical faces higher than about 6 feet and should not be placed against overhanging faces of any height. Treatment may consist of fillets of dental concrete or formed concrete to reduce face height, or shaping the rock by drilling, preferably without blasting. The right-angled corners between subhorizontal and subvertical faces will generally require slush grouting. In many instances large blocks have moved toward the valley and have left opened joints behind them; these joints are now occupied by weathered

material and occasional roots. As it is often impractical to remove the blocks, the joints should be cleaned out to a distance of about three times their width and treated with dental concrete.

On some projects shotcrete has been used to seal the joints and regularize the rock surface. The procedure appears to have been successful and economical, but it easily leads to excessive use of concrete and is incompatible with careful treatment of each joint. It is likely, as the weight of overlying embankment increases, that wide cracks can develop in the shotcrete, through which water may have access to the core. The Group would prefer that shotcrete be avoided as a general method of treatment, but recognizes that rigid supervision to ensure sparing use in connection with more detailed treatment of individual conditions by other means may be acceptable.

The rock slide at the downstream part of the left abutment is a special consideration that will be considered in the next section.

3.4 Other Features of Left Abutment

3.4.1 Rock Gulley

A rock gulley in the left abutment makes a small angle with the axis of the dam. The geometric relation between the gulley and the core is unclear and needs to be defined by a series of cross sections. If at some locations the base of the core slopes downstream on the upstream side of the gulley, reservoir pressure may tend to push the core away from the rock. It may then be appropriate to alter the core geometry locally, perhaps with an apron upstream and a filter against the rock downstream. Appropriate measures, if required, will be apparent when the cross sections are available.

3.4.2 Rock Block Slide

The rock block slide on the downstream portion of the abutment does not in itself endanger the dam because of any potential for sliding, but if incorporated in the shell it will constitute an inclusion having properties different from those of the shell. The implications of the difference require consideration.

The frictional resistance of the rock mass is likely to exceed that of the adjacent gravel fill, but its compressibility may be much greater. Under dynamic conditions, deformations originating in the slide material would exceed those of compacted gravel in the same location. The consequences of the difference would depend on the extent and location of the rock mass with respect to the geometry of the dam. These relations need to be clarified by a series of cross sections perpendicular to the axis of the dam. A rational basis for deciding whether any measures need to be taken can then be developed. Measures, if required, could include removal of part or all of the included material, or filling some of the larger voids.

3.5 Materials

Stockpiles of the various embankment materials being produced by the Phase I contractor were viewed by the Group. In addition, a small test fill was under construction on 11 May.

The borrow source for all granular zones is the river alluvium, which the Group was able to observe upstream of the damsite. The face of the borrow area disclosed a relatively homogeneous mass (considering its fluvial origin) of granular materials largely derived from crystalline rocks and, in the larger sizes, generally rounded to subrounded. The bank-run

material is well suited to constitute the main body of the dam, Zone 4. It also is supplying excellent material for Zones 2 and 3.

The test fill demonstrated that the transition Zone 3 material tends to become segregated and to leave assemblages of large gravels and cobbles coarser than desirable to filter Zone 2. Consideration should be given to adjusting the split between Zones 2 and 3 so as to limit the size of Zone 3 to, say, 8 or 9 inches instead of 12 inches. We understand that this adjustment could also be advantageous in production of the desired quantity of Zone 5.

The core material, Zone 1, appears to be fully satisfactory. It appears to handle easily and to possess both stability and impermeability. To ensure flexibility and reduce the tendency toward cracking, the placement moisture content should generally be at or slightly above optimum rather than below.

Although the random Zone 4A, expected to contain largely gravelly clays similar to the core material, is an acceptable means to utilize the available materials economically, and although its presence may somewhat reduce deformations of the downstream shell during seismic shaking, efforts should be made to minimize the extent of the zone in favor of the more free-draining Zone 4. The clayey gravels will interrupt the drainage of the downstream shell and thereby increase the demands on the filter and transition zones. The latter zones have the capability of handling the drainage, but a free-draining shell would constitute a supplementary line of defense.

4. SEISMOTECTONICS

4.1 General Remarks

Because of well-recognized earthquake hazards in the Utah region - and corresponding public awareness of those hazards - seismic safety has been a fundamental concern throughout considerations of building a dam at Jordanelle. This has been particularly true since the 1982-83 consultant review.

As a result of thorough investigations by Bureau personnel of both the site geology and the seismotectonics of the region surrounding the damsite, the key issue of the degree of susceptibility of the selected foundation and abutments to coseismic surface deformation has effectively been resolved. Within the limits of achievable scientific and informational certainty - and with the eventual added safeguard of having bedrock along the entire dam axis exposed for scrutiny - potential deformation of the dam foundation from earthquakes is constrained to be very small or negligible and non-threatening to a properly designed embankment dam. Furthermore, appropriate parameters of potential seismic loading have been well specified for conservative design considerations.

In view of the intensive efforts the Bureau has made to date to deal with seismotectonic issues for safe siting of a Jordanelle Dam, consistent assurance of safety has now turned to (1) final design details of the embankment and waterways, and (2) dynamic analysis to test the response of the proposed dam to design earthquake motions. As the Bureau completes engineering decisions for a Jordanelle Dam, we encourage the continuation of policies aimed both at instilling public confidence through suitable margins of safety and at providing documentation capable of withstanding critical professional scrutiny.

Current understanding of seismotectonic factors relevant to the siting, design, and construction of a seismically safe dam at the Jordanelle Damsite has evolved to a relatively high degree - as reflected by recent Bureau reports authored by Sullivan and others (1988a,b). These reports reflect the culmination of extensive efforts by the Bureau's Seismotectonic Section, and they incorporate refinements and responses following two earlier consultant reviews (Arabasz and others, 1983; Peck and others, 1986). Here we focus on the basic seismotectonic conclusions presented by Sullivan and others (1988b) for the Jordanelle Dam and reservoir site. We also evaluate the adequacy of response to specific recommendations for further seismotectonic studies made in 1986 during the preceding consultant review (Peck and others, 1986).

In order to provide a meaningful assessment of the "adequacy" of the Bureau's seismotectonic investigations and interpretations, it will be useful to develop a few basic concepts that provide a framework for subsequent comments. The first concept is that of a "level of confidence". In a statistical sense, this would be an estimate of the percentage of times that a correct result could be expected from repeated experiments. Seismotectonic conclusions, however, are not generally amenable to a frequency interpretation. Rather, a level of confidence would more typically relate to a subjective degree of belief that the true state of nature has been correctly characterized. Residual uncertainties are then the result either of scientific uncertainty (removable only when state-of-the-art scientific understanding is advanced) or informational uncertainty (removable by acquiring more information).

Levels of confidence have a definite meaning to scientists and engineers. Unfortunately, they are not fully understood by the general public and by public officials having non-technical backgrounds. Consequently, we consider a second concept, that of "assurance". By this we mean a degree of confidence that appeals to common experience and to intuitive notions of redundancy and conservative allowance. A third concept we will consider is that of "error". Because earth scientists deal with multiple working hypotheses, error might arise from either rejecting a true hypothesis or accepting a false one. For the purpose of our evaluation, we simply explore reasonable consequences of erroneous interpretations.

4.2 Characterization of Seismotectonic Framework

The seismotectonic framework of the region surrounding the Jordanelle Damsite has been characterized by the Bureau in a thorough way, consistent with current expert judgment and up-to-date observations of researchers actively investigating the region's geological and geophysical makeup, its earthquake-generating structures, and deformational processes leading to earthquake occurrence. As emphasized in a previous consultant review (Peck and others, 1986), we believe the Bureau's decision to undertake neotectonic studies of regional scope throughout the back valleys of the Wasatch Hinterland has provided an invaluable and critical basis for assessing the seismotectonics of the Jordanelle Damsite. In particular, the studies reported by Sullivan and others (1988,a,b) provide quantitative constraints on the distribution, kinematics, timing and rates of late Quaternary surface faulting throughout a region that had previously been relatively unstudied.

An understanding of the seismotectonic framework of any seismically active region is an evolutionary process, invariably benefiting from new information produced by the occurrence of occasional moderate-to-large earthquakes. The perspective and details documented by Sullivan and others (1988a,b) reflect as complete an understanding of the seismotectonic framework of the region of the Jordanelle Damsite as is currently achievable. The historical experience of moderate-to-large earthquakes throughout the Intermountain seismic belt combined with the detailed site-specific information acquired for the Jordanelle Dam and reservoir site lead us to judge that the seismotectonic framework has been correctly characterized with an adequately high level of confidence. This includes rates of contemporary deformation, the location and geometry of active faults, the correlation of seismicity with geologic structure, and fault mechanics. Assurance comes from extensive overlap of the Bureau's exploration program with a major 5-year program of focused research on earthquake hazards in Utah's Wasatch Front region sponsored by the U.S. Geological Survey (Gori and Hays, 1987).

After critical scrutiny of the Bureau's seismotectonic reports (Sullivan and others, 1988a,b), we support the interpretations made therein - with any variance limited to very minor, inconsequential details. To clarify one point, a statement on p. 58 of Sullivan and others (1988b; see also Sullivan and others, 1988a, p. 35) indicates that moderate-magnitude earthquakes occur on faults that are unrecognized at the surface. Such an interpretation should be recognized as true for many, but not necessarily all moderate-magnitude earthquakes in the region.

In terms of the characterization of the seismotectonic framework, we identify only one case for exploring residual uncertainty. This relates to the possibility of minor slip on some secondary structure having an east-west or some non "basin-range" trend. Results of "hydrofrac" in-situ stress measurements sponsored by the Bureau at Jordanelle and at the Fifth Water Underground Powerplant site (see Sullivan and others, 1988a, p. 25ff) support the Bureau's interpretation that faults favorably oriented for seismic slip are normal faults oriented north-south to northwest-southeast. Abundant field evidence also supports this interpretation. Evolving understanding of the variability of crustal stress state in the Utah region, especially as determined from relatively shallow in-situ measurements (e.g., Zoback, 1988), suggests that some residual uncertainty must be admitted about the range of orientation of fractures susceptible to normal slip under the contemporary stress regime. The Bureau has gathered compelling information to preclude the expectation of coseismic surface faulting on faults of any orientation within the dam foundation or abutments. A remaining consideration is whether minor secondary displacements can be similarly precluded on faults of non "basin-range" trend (see Section 4.4).

4.3 Seismic Sources, Surface Faulting and Corresponding MCE's

The Group believes that a high level of confidence can be placed in the Bureau's interpretation of seismic sources, its evaluation of the potential for surface faulting at the damsite, and MCE's corresponding to the identified seismic sources. This confidence stems from extraordinary investigations of the site geology combined with studies

of the regional seismotectonics discussed in Section 4.2. No new information has come to light that would change our concurrence with the conclusion, reached by the 1986 Consultant Group (Peck and others, 1986), that the "proposed foundation and abutments can be considered free of faults and shears that would pose a potential for expectable coseismic surface faulting". Completion by the Bureau of a program of angle-hole drilling and coring, proposed by the 1986 Consultant Group, beneath the floodplain of the Jordanelle Dam foundation reinforces that conclusion. Comprehensive documentation of the results of that drilling program (Morris, 1987) reflects a thoroughly diligent response by the Bureau to the 1986 recommendations.

Parameters for MCE's that the Bureau has specified for Jordanelle Dam (Sullivan and others, 1988a, p. 61) are well-founded. Because one of us (WJA) has recently co-authored a paper that states, "future Wasatch Front earthquakes could have surface wave magnitudes of up to 7.5-7.7" (Arabasz and others, 1987, p. D-37), some comment is warranted about concurrence of the Group with the Bureau's MCE of magnitude (M_s)7½ for the Wasatch fault. The reason for suggesting a magnitude as high as 7.7 stems from consideration of the 1915 Pleasant Valley, Nevada, earthquake, which had a surface-wave magnitude of 7.7 and a rupture length of 62 km (see Arabasz and others, 1987, p. D-37). A maximum magnitude of M_s 7½ has conventionally been accepted for the Wasatch fault, following the lead of the U.S. Geological Survey. Youngs and others (1987) have recently applied multiple techniques for assessing a maximum earthquake magnitude to the Wasatch fault. For an unsegmented model of the Wasatch fault, their results indicate a subjective probability of 0.99 that the maximum magnitude is M_s 7.5 or less, and they assign a probability of

0.01 that it is as high as $M_s 7.75$. For segmented models of the Wasatch fault, they assign no segment a maximum magnitude greater than $M_s 7.5$. Thus, the Bureau's MCE of $M_s 7\frac{1}{4}$ for the Wasatch fault is well-supported, and ground-motion effects from some future event that technically might slightly exceed that surface-wave magnitude limit by a few tenths of a unit are accommodated by conservative design allowances the Bureau has made from dynamic deformation analysis of the final Jordanelle Dam design (Section 5).

As we scrutinize the Bureau's interpretations relating to seismic sources, surface faulting, and corresponding MCE's, two significant assurances are evident. First, the dam foundation will be excavated to bedrock beneath the entire core of the dam prior to construction, thus leaving no uncertainty about the presence or absence of faults in the dam foundation. Second, the Bureau has adopted the conservative position of allowing a random earthquake of magnitude 6 to $6\frac{1}{2}$ (below the threshold of surface faulting in the Intermountain seismic belt) to occur directly beneath the proposed dam. For the interpretations of this section, the remote odds of being wrong pose little concern because the Bureau has selected the most favorable and "forgiving" type of dam for a seismically active area - that is, an embankment dam capable of remaining intact even if foundation displacements occur greater than those specified (discussed next).

4.4 Potential Deformation of the Dam Foundation

In response to a recommendation made by the 1986 Consulting Group, the Bureau's Seismotectonic Section has completed a comprehensive study of relevant historical observations together with modeling of elastic surface deformation associated with various scenarios of static normal slip on

a buried fault (Wood, 1988). The Bureau concludes, "Any favorably oriented faults mapped in the dam foundation should be considered capable of displacement of as much as 15 cm" (Sullivan and others, 1988b, p. 64). Elsewhere, the position is stated that, "If our conclusion that no north-trending faults are present [in the dam foundation] is confirmed, then potential surface displacements in the foundation should not be considered in the design of the dam" (Sullivan and others, 1988b, p. 62).

Bureau geologists have adopted the hypothesis that discrete displacements (due to slip on a buried fault at seismogenic depth) will occur at the surface only on faults or shear zones having a linear dimension on the order of 1 to 2 km or more, and they reject the hypothesis that secondary displacements will occur on shear zones of tens or hundreds of meters in length. This position is reasonable and consistent with the apparent absence of observed secondary bedrock faulting accompanying historical normal faulting earthquakes of moderate size. But it is difficult to quantify a degree of confidence in what must be considered a working hypothesis.

In the case at hand, assurance rests on exploring the consequences of being wrong. Beneath the floodplain and right abutment, there are no adverse consequences because the embankment design will allow discrete displacements in the foundation of the specified 15 cm. Should faults be identified in the mapped foundation as candidates for such low-probability secondary displacements, and be targeted for foundation treatment, it seems appropriate that consideration be extended to faults of diverse trend, not just faults of northerly trend (see discussion of residual uncertainty about stress state in Section 4.2). Rigorous logic demands that the consequences of 15-cm foundation displacements, however improbable

we judge them to be, also be considered for the left abutment. Hypothetical consequences for the tunnel works are considered separately in Section 6.6.

4.5 Reservoir-Induced Seismicity

In response to another recommendation of the 1986 Consultant Group, the Bureau has completed a thorough study (La-Forge, 1988) relevant to examining whether reservoir-induced seismicity (RIS) has occurred in prior cases of reservoir impoundment in the Utah region. Statistical analysis of available seismicity data yields qualified negative results for the association of any RIS with 14 earlier dams in the Utah region. These dams range in structural height from 22 to 81 m and have reservoir capacities ranging from $0.067 \times 10^8 \text{m}^3$ to $13.7 \times 10^8 \text{m}^3$. All but one of the reservoirs were filled before the 1970's at a time when seismographic control for the detection and location of small-magnitude earthquakes was poor. Nevertheless, the Bureau's study appropriately quantifies the historical experience in Utah as background for discussions of the potential for RIS at Jordanelle.

Recognizing that the Jordanelle Reservoir will be relatively deep (99 m), although with a small volume ($3.9 \times 10^8 \text{m}^3$), and in an extensional tectonic environment conducive to RIS, the earlier consultant reviews advocated open discussion about the potential for RIS following impoundment of the Jordanelle Reservoir. Local seismographic control has been good since 1981. The Group judges that the Bureau has adopted an appropriate and credible approach for quantifying the probability of RIS at Jordanelle. Using a published methodology that compares characteristics of the eventual Jordanelle Reservoir with a worldwide database, the Bureau estimates the

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probability of RIS at Jordanelle as about 6% to 7% (Sullivan and others, 1988b, p. 65).

Assurances relating to RIS at Jordanelle include (1) straightforward consideration by the Bureau of its possibility following reservoir impoundment, (2) the absence of any significant RIS associated with other reservoirs in the Utah region and the calculated low probability of its occurrence at Jordanelle, and (3) support by the Bureau for ongoing seismic monitoring of the vicinity of the damsite and reservoir. There are no adverse consequences of residual uncertainty because maximum influences of any RIS will not exceed defensive design measures already being implemented to ensure safe seismic performance of a Jordanelle Dam.

4.6 References

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5. DESIGN GROUND MOTIONS AND DYNAMIC DEFORMATION ANALYSIS

5.1 General Remarks

The focus of this section is an evaluation of the Bureau's design ground motions and its analysis of dynamic deformation for the proposed embankment dam at Jordanelle. The principal document made available to the Consultant Group for review prior to the April 26-29 meetings was a technical memorandum (Wilson, 1988) entitled, "Seismically Induced Embankment Deformations, Jordanelle Dam, Central Utah Project, Utah." A preprint by Von Thun and others (1988) represents an essential companion document that was provided to the Group at the time of the late-April meetings. On May 11 more results of dynamic analyses of the embankment design were presented to R. B. Peck and W. J. Arabasz by J. A. Wilson. The results were comparisons of seismically-induced deformations for an embankment dam having alternative downstream slopes of 1.75:1 and 2.0:1 (compared to the proposed slope of 1.5:1).

The 1986 Consultant Group emphasized the importance of selecting appropriate earthquake loading parameters and of ensuring rigorous dynamic analysis of the final dam design - all capable of withstanding critical scrutiny. The current Consultant Group has confidence in the procedures subsequently used by the Bureau and in the results obtained that indicate safe performance of the selected embankment design under earthquake loading by the MCE's. To meet external scrutiny it will be advisable for the Bureau to prepare final documentation of the ground-motion parameters that were selected and their justification, procedures of the dynamic analysis, and the finally estimated earthquake-induced displacements for the embankment dam at Jordanelle. This might simply involve revision of the text of the technical memorandum by Wilson

(1988) to include (1) more explicit linkage with the methodology of Von Thun and others (1988) as one basis for selecting design earthquake accelerograms for Jordanelle, (2) expanded discussion of the origin of the synthetic accelerogram for the local magnitude 6.5 earthquake, and (3) inclusion of updated results reflecting seismic loading by each of the three design earthquake accelerograms.

5.2 Earthquake Ground Motions

The MCE's governing earthquake-resistant design for a Jordanelle Dam are agreed to be (1) an earthquake of surface-wave magnitude 7.5 on the Wasatch fault, as close as 30 km to the damsite, and (2) a local random earthquake of surface-wave magnitude 6.0 to 6.5 beneath the damsite at 8 to 15 km focal depth (Sullivan and others, 1988b, p. 61). For these MCE's, guidelines are then required both for specifying maximum values for parameters of strong ground shaking and, importantly, for selecting appropriate and acceptable ground motions in the form of accelerograms for dynamic analysis of the dam design.

The Group concurs with the Bureau's premise that ground motions to be expected from future normal-faulting earthquakes will not differ significantly from those produced by earthquakes associated with thrust faulting or strike-slip faulting. This premise, arrived at on the basis of a limited data set by Von Thun and others (1988), is consistent with the results of a recent study of more than 600 accelerograms from moderate to large normal-faulting earthquakes in the western U. S., the Mediterranean region, and New Zealand (Westaway and Smith, 1987). Accordingly, ground motion parameters corresponding to the MCE's and estimated by the Bureau from available published relationships (Wilson, 1988, p. 4),

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which tend to be dominated by observations from strike-slip and thrust-faulting earthquakes, are judged to be appropriate for the tectonic environment of normal faulting at Jordanelle.

The spectral content of earthquake shaking is well known to be more important for engineering design than a single parameter such as peak horizontal acceleration. The Bureau makes a convincing case for preferring spectrum intensity as an important index of response spectra for purposes of comparison (Von Thun and others, 1988). Further, the justification for using velocity spectrum intensity for evaluating the response of a gravelfill embankment dam such as Jordanelle appears to be well-formulated.

The Bureau has selected three design earthquake accelerograms to represent the MCE's. These include: (1) a hybrid record (the so-called "Pacoima-Taft" or "HBS-M7.2-2K-81" record) developed at the University of California, Berkeley by Professor H. Bolton Seed to represent a nearfield magnitude 7.25 earthquake in the San Francisco area and scaled to represent the local earthquake of magnitude 6.5 at Jordanelle; (2) a synthetically generated accelerogram (of unspecified origin) considered by the Bureau to be representative of a mean magnitude 6.5 local event; and (3) a version of the Pacoima-Taft accelerogram scaled to represent a magnitude 7.5 earthquake on the Wasatch fault. The Group agrees with the acceptability of these accelerograms, which meet, or significantly exceed in case (1), the Bureau's own criteria for velocity spectrum intensity.

Arguments are set forth by the Bureau (Wilson, 1988) that the local magnitude 6.5 earthquake has greater dynamic parameters (except for duration) than the magnitude 7.5 Wasatch fault earthquake and that the synthetic accelerogram, case (2), is preferred for the local earthquake. This is because its velocity spectrum intensity of 163 centimeters more

closely approximates the Bureau's predicted maximum value of 150 cm for a local magnitude 6.5 earthquake, rather than the scaled accelerogram for case (1), which has a large velocity spectrum intensity of 286 cm. The Group accepts the Bureau's reasoning that the synthetic seismogram for the local magnitude 6.5 earthquake probably represents a realistic upper limit for dynamic loading (except for duration) of an embankment dam at Jordanelle. Nonetheless, we consider it advisable in final documentation to present results of dynamic analysis based on application of all three design earthquake accelerograms. Results informally presented to R. B. Peck and W. J. Arabasz indicate dynamic stability in all three cases, whether for a downstream embankment slope of 1.5:1, 1.75:1, and 2.0:1. Such results provide significant assurance of the seismic safety of Jordanelle Dam - even when subjected to conservatively strong shaking. Also, the comparative results provide explicit assurance of non-threatening effects on the dam from a large earthquake on the Wasatch fault, which can be argued to have a higher probability of occurring during the lifetime of the dam than does the magnitude 6.5 local earthquake.

5.3 Dynamic Deformation Analysis

Analysis of seismically-induced embankment deformations for Jordanelle Dam have been completed by the Bureau for the three driving accelerograms specified in Sections 5.2 and for comparative downstream embankment slopes of 1.5:1, 1.75:1, and 2.0:1. The methodology, derived from the original concept of Newmark (1965), is well known, has been found to be in agreement with experience, and is accepted as standard engineering practice. In essence, along any arbitrarily chosen surface of potential sliding the slips that occur while

the shearing stresses during shaking exceed the shearing strength are summed up to give the total displacement along that surface. Various surfaces are investigated until the critical ones are located. Broad experience with such calculations has led to an appreciation of the effect of variations in the seismic input on the results, and this appreciation has been utilized in the development of the synthetic accelerograms used as input.

The results of the analyses are interpreted in terms of loss of freeboard. The loss should not exceed an amount that would permit overtopping of the embankment.

5.4 Implications Concerning Downstream Slope

The analyses have shown that the loss of freeboard under the most severe of the three postulated seismic events decreases, as would be expected, with decreasing downstream slope. Moreover, the effect of reducing the slope from 1.5:1 to 1.75:1 is appreciably greater than that of further reduction to 2:1. Thus, there is a disproportionate benefit from a modest change of the downstream slope from 1.5:1 to a flatter value. Nevertheless, even with the 1.5:1 slope, the freeboard remaining after the most critical postulated earthquake affords an appreciable margin of safety against overtopping. The Group, therefore, believes that the downstream 1.5:1 slope, even though bordering on precedent for a gravel dam, is in fact conservative and constitutes a timely advance in the state of the art of embankment dam design.

5.5 References

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6. WATERWAYS

6.1 Scope

The scope of this section of the Group report as defined in the Statement of Work is to review and evaluate the adequacy of the laboratory testing programs, rock mass classifications, and rock mechanics analyses; the design of the underground waterway structures (including layout and support methods); and to make recommendations. It is assumed that field investigations and their interpretation are an integral part of the laboratory testing program and that the design of the underground structures includes reference to seismic response.

6.2 Testing Program

6.2.1 Mapping

The surface of the left abutment has been thoroughly mapped both within and outside the embankment profile. However, mapping outside the cleared area is obviously less comprehensive than where the rock surface has been cleared off. Eight structural domains have been identified within the abutment, only one of them associated with a difference in the geologic facies. This variety of structure necessarily gives rise to uncertainty about projection of the surface mapping to tunnel depth.

6.2.2 Structural Zones

Several structural zones have been identified within the abutment. The superficial appearance of these zones is of wide, weathered regional joints or other continuous fractures in the rock mass. It is known from the boring program that ST-3 intersects the gate chamber. Projection of ST-2

along the plane of its surface exposure indicates that it is parallel to and close to the tunnel system extending from the selective level intake structure to the outlet structure over most of its length.

The surface of the exposures of these zones is of a mass of disaggregated grains of andesite porphyry with no clay. The grains are of coarse sand size. Clay has been identified in some drill holes, but poor recovery does not permit knowledge of the extent of this type of weathering. The surface of the abutment as now exposed appears to have weathered very rapidly in only a single winter season.

In the absence of evidence to the contrary, it must be assumed that the structural zones are highly permeable in comparison to the surrounding rock and may also be erodible. The consequences of these properties should be considered in design. Moreover, as discussed in more detail in Section 6.4.1, the soil-like characteristics of the zones have unfavorable implications with respect to the design and, particularly, to the construction of the tunnels.

It is recognized that the structural zones are not simple geometric features that can be projected with certainty to large distances from exposures or drillhole data. Nevertheless, their potential significance is such that three alternatives should be given consideration: (1) further exploration should be undertaken to define the zones as closely as possible so that the underground works can be located insofar as possible to avoid them; (2) the structures should be relocated to positions clearly as far removed from the presently projected features as practicable; or (3) the risk of serious construction difficulties and attendant high costs and potential delays must be accepted.

6.2.3 Jointing

Extensive work has been done on the identification of joint sets and their potential for producing rock failures. However, many identified sets represent very low concentrations, and, for practical purposes, the joint domain may as well be considered to be random, especially where continuity is low and spacing irregular. Nevertheless, the identification of potential failures is useful and, with the continuing attention to joints with angles of friction lower than the 40° currently reported in the available documentation, should contribute to a useful understanding of potential failure modes and regions, especially in the gate chamber. Since the gate chamber and access shaft will have a flexible and minimal support system, these are the areas requiring closest attention.

A significant joint set has been identified which runs parallel to the tunnel (and to ST-2) in its present location.

The identification of rock properties relevant to stability of the underground structures has been done in a comprehensive manner and leads to confidence in the results. Investigation of rock mass permeability is perhaps more relevant to the embankment design than to the waterways design. However, the comprehensive investigation leads to confidence in the prediction of relatively low flows in the gate chamber excavation.

6.3 Rock Mass Classifications

All rock mass classification systems are empirically devised and fundamentally reflect an averaging of actual support installed in tunnels and caverns where few controlled observations were available. Their legitimate use is limited to predicting the kind and amount of support likely to be

installed in a given situation and providing an adequate basis for estimating construction cost. They have no relevance to the design of permanent linings placed after initial support by a primary lining, and they are unrelated to the requirements of a lining designed for internal pressure. An investigation conducted at M.I.T. under the direction of Prof. Herbert Einstein concluded that all the systems investigated were conservative by an amount which was not calculable, since it varied from one tunnel condition to another.

6.4 Rock Mechanics

6.4.1 Tunnels

The design approach correctly recognizes that the rock mass itself is the primary support system. However, given the potential for close involvement of ST-2 with the tunnel excavation, it is clear that this capability may be compromised. On the assumption that ST-2 is several feet wide and filled in with material of the consistency of coarse sand, clay, or combinations of these materials, it is clear that the tunnel may be driven for substantial lengths in mixed face conditions.

If part of the heading is in rock requiring blasting, whereas part is in soft ground that may be running ground or may be transformed into running ground by the blasting, control and support of the ground may be lost. At best it is known to be preferable to cross such features as nearly as possible at right angles. Moreover, if the soil-like feature parallels the tunnel a short distance away, the system of rock bolts proposed for support may be unsuitable. Any support system designed for basically sound rock is likely to be inadequate under these conditions, and the cost of coping with

the conditions, including the cost of delays, can be enormously greater than in more homogeneous materials.

Even if it can be demonstrated that the tunnel will be sufficiently distant from ST-2 to avoid the problems foreseen, there remains the fact that much of the tunnel is parallel to a significant joint set. Such a situation generally results in more than normal overbreak and any problems associated with a specific joint will persist over a substantial distance.

The Group recognizes that projections of ST-2 on the basis of present information may be questionable, but it believes that the view that the feature may not be encountered extensively or that it may be innocuous is overly optimistic. Further consideration should be given to additional exploration and to realigning the tunnel so as to cross rather than parallel the feature closely, or both. The additional exploration should make use of double- or triple-tube core barrels to enhance recovery.

6.4.2 Gate Chamber and Access Shaft

Work has been done and is continuing on the stability of the walls and roof of these structures. Insofar as possible, the specific areas of risk should be identified along with the maximum size or size range of the unstable block or blocks. This will enable provision of suitable and adequate support systems when mapping in the excavation shows the precise areas requiring support. Use of a rock mass classification system as a basis of design for these structures is inappropriate.

The treatment required as a consequence of the intersection of ST-3 with the chamber depends upon the nature and extent of the joint filling material. It will be necessary

both to prevent ravelling from the zone and to provide adequate support for rock blocks partially defined by the zone.

The stress conditions around the rectangular, flat-roofed gate chamber could be improved by modifying the shape to avoid the right-angled intersections.

6.5 Design

6.5.1 Tunnels

The method used in development of the tunnel lining is proper and conservative. Since it results in relatively thin linings, there would be no purpose served in reducing the degree of conservatism. The design properly recognizes the need for intimate contact between concrete tunnel lining and the rock in place and is modeled on generally expected rock behavior. Extension of the design assumptions is needed for those areas where the tunnels intercept structural zones where the rock mass properties change significantly. It may be appropriate to use the same design for these areas as for the free standing design close to the gate chamber.

6.5.1.1 Consolidation Grout

Consolidation grout could be used to improve rock properties in the structural zones, but it cannot be relied upon to make the treated areas either uniformly strong or equivalent to the undisturbed rock mass. Consolidation grout should therefore be used only when it is desirable to reduce local water flows.

6.5.1.2 Reinforcement

The tunnels are reinforced to resist internal water pressure, and the reinforcement should serve to limit cracking of the concrete lining to acceptable levels. However, in view

of the difficulty and cost of placing concrete in reinforced linings, it might be worthwhile to examine the behavior of an unreinforced lining mobilizing the passive resistance of the rock. If strains remain within the elastic range, consideration could be given to omitting the reinforcement. In this event, however, particular attention is required to prevent shrinkage cracks, including deliberate use of low-strength concrete and other measures to reduce the heat of hydration.

6.5.1.3 Temporary Support

The design of the support system is based on the recognition that the initial support has a permanent load-carrying function in the completed structure. The Group agrees with this premise, but notes that detailed design by the USBR of the initial support may dilute the contractor's usual legal responsibility to provide a safe working place. It may also restrict the contractor's use of cost-saving items (for instance, split set or Swellex instead of fully grouted rock bolts) with presumably lower bid prices.

6.5.2 Gate Chamber and Access Shaft

For these structures, construction support and final support are complementary. The choice to use Q and RMR systems for support design will yield conservative results, as earlier discussed.

6.5.2.1 Rockbolts and Shotcrete

For rock bolts and shotcrete to work properly together, it is important that they be integrated. It may be preferable in the rock conditions at the site for the first layer of shotcrete to be applied before rock bolts are

installed. This provides local stability of the roof during rock bolt drilling and installation. Before the final shotcrete is applied, mesh should be placed to cover the shotcreted surface and this mesh should be secured to the rock bolts. This method will provide a system which is structurally competent even after local failure.

Support of the walls of the excavation includes the support of sliding blocks, or blocks in critical equilibrium. Rock bolts of sufficient length and strength can be used to this end, provided that the design recognizes the design earthquake.

6.5.2.2 Consolidation Grout

The consolidation grout proposed around the access shaft will reduce seepage flows, but, since this flow is expected to reduce rapidly in any case, it is of doubtful value. On the other hand, consolidation grouting of ST-3, if practical, may improve its properties as a potential failure plane.

6.5.3 Instrumentation

The use of instrumented rock bolts and borehole extensometers to monitor rock behavior is a wise precaution.

6.6 Seismic Response

While little direct effect from local seismicity is expected, it is appropriate to examine the effects of the design maxima on the waterways.

For an event resulting in vibration at the site, no significant effect would be anticipated on buried structures because of the long wavelength and relatively low amplitude of the vibrations.

The maximum tilting foreseen would be insufficient to cause any substantial effect on the structures. The only event which could have a direct effect would be a direct shear on a N-S plane within the embankment limits, or close outside them. The maximum displacement conceivably associated with such a shear is postulated as 15 cm. This distance is less than the wall thickness of the tunnels and embedded pipe structures so that the tunnels would remain serviceable even though a leak would develop. Moreover, such a leak would not occur within the embankment. The bypass pipe, being 36 inches in diameter, would be partly occluded, but would remain temporarily serviceable because of its embedment in concrete. The gate chamber drain pipe, 12 inches in diameter, would be substantially reduced in effectiveness, but it is not a critical item.

If the shear would occur at the gate chamber, the gate operating mechanism could jam. However, at least one gate will always be open so that flow would continue. The same event at the outlet control structure could also jam the valve and/or gate mechanisms. Again, at least one valve and gate set would be in the open position and flow would continue. Since these elements are exposed, quick repair or other emergency measures could be undertaken promptly.

Controls for the gate chamber and outlet control are duplicated at both locations and have an independent power supply. Therefore, provided that use is made of flexible cable and power cable connections which would not be subject to direct damage, then all systems would remain operable in any circumstances short of a highly localized damaging event.

6.7 Construction

This section is introduced to consider certain elements more easily discussed separately.

6.7.1 NATM

Reference is made in the document, "Underground Waterway Structures Design Summary", April 1988, to the potential for use of NATM in construction of the tunneled waterways. The Group notes that the term NATM has different meanings within the tunneling community. In its complete sense, as developed by the Austrians, NATM implies all of the following components:

1. Prompt use of shotcrete as the immediate support, supplemented by rock bolts, lattice girders, ground stabilization (spiling, injections, jet grouting, etc.) as appropriate to the class of ground.
2. Subdivision of the ground into classes, each of which requires a specific degree of support, and each of which carries a specific price per unit length of tunnel.
3. Agreement at the heading between the engineer and the contractor, for each advance of the tunnel, as to the type of ground (and, thus, the cost).
4. Selection of a shape of the opening suited to the state of stress anticipated around it.
5. A multiplicity of field measurements which, together with sometimes rather elaborate calculations, form the basis of modifications to the support system as tunneling progresses and as time passes.

The Group interprets the Bureau's use of the term NATM as meaning essentially item (1) above. In this context, we

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have no substantive reservations concerning its use. We would note that, if items (2) and (3) are intended, however, the essence of the application of this method is cooperative decision-making involving both the engineer and the contractor. This is at best difficult to accomplish. Moreover, as recent experience on the Washington Metro demonstrates, even on large contracts where NATM is an established construction and contracting method, NATM will not necessarily produce the low bid.

6.7.2 Flexibility

A construction sequence has been postulated by the designers for purposes of controlling the design. It will be recognized that other methods may be preferred by the contractor, and the Group recommends that the specifications be drawn to permit the maximum flexibility to the contractor consistent with the needs of the project.

APPENDIX

Documents Furnished for Review

Geology Report for Results of Jordanelle Damsite Angle Hole Drilling Program Proposed by the 1986 Consultant Group, August 1987

Rationale for Selection of Proposed Embankment Dam Design
- (undated)

Decision Memorandums: November 1986, Stage 1 Final Design Concurrence; July 1987, Stage 2 Conceptual Design Concurrence; March 1988, Stage 2 Finalization of Design Concept

Geology Report for Jordanelle Dam, Geology of the Left Abutment Foundation, April 1988

Borrow Area Analysis, Tech. Mem., Wm. O. Engemoen, March 1988

Seismically Induced Embankment Deformation, Tech. Mem., John A. Wilson, March 31, 1988

Diversion, Tech. Mem., Wm. O. Engemoen, March 1988

Static Stability, Tech. Mem., Perry J. Hensley, April 1988

Foundation Treatment, Tech. Mem., Wm. O. Engemoen, April 1988

Jordanelle Dam - Stage 2, Underground Waterway Structures Design Summary, April 1988

Geology Report for Jordanelle Dam Low Level and Selective Level Outlet Works and Gate Chamber, April 1988. Vol. I, Text; Vol. II, Appendices and Drawings

Earthquake Ground Motions for Design and Analysis of Dams (Paper prepared for publication). Von Thun, Roehm, Scott, and Wilson, 1986

Dynamic Analysis of Embankment, Tasks Accomplished Since April 26 Consultants' Meeting, J. A. Wilson, 1986

See also list of references, Section 4.6, regarding seismotectonics



Geologic Design Data Report

for

Jordanelle Dam Site and Reservoir
Central Utah Project
Utah

Volume VII: Consultant Reports

April 1985

PRELIMINARY

SUBJECT TO REVISION

• United States

Department of the Interior

Bureau of Reclamation

Bonneville Construction Office

ENCLOSURE

4

REVIEW AND ANALYSIS OF GEOLOGIC,
SEISMOTECTONIC, AND DESIGN DATA
FOR THE PROPOSED JORDANELLE DAM
BONNEVILLE UNIT, CENTRAL UTAH
PROJECT, UTAH

BY: W. ARABASZ, R. JAHNS,
AND R. PECK

FEB. 1983

4.2.5 Seismically Induced Waves

Conservative slopes, generous freeboard, and a wide crest constitute the best safeguards against a succession of overtopping waves and against serious damage if a limited number of waves should pass over the crest. These provisions are feasible and intended at the site.

4.2.6 Landslides Along Reservoir Rim

Although this subject is not strictly within the scope of our review, general observations in our overflight of the reservoir area and general knowledge of the local topography suggest that the conditions associated with large, rapid landslides or rock falls into the reservoir from above water level are not present. Such events have in the past been characteristic of landslide-induced catastrophic waves such as those at Vaiont (Kiersch, 1964), Loen Lake, and Tjelle (Bjerrum and Jorstad, 1968). Thus, we consider it likely that further studies which would be appropriate during final design, will demonstrate that the mitigating measures mentioned in connection with seismicity induced waves will be sufficient to assure safety against reservoir-rim slides, whether induced by earthquakes or by other causes.

GEOLOGIC REPORT
JORDANELLE RESERVOIR

BY: BOB L. BRIDGES

NOV. 1984

November 29, 1984

Mr. John Larsen, COTR
Department of Interior
Bureau of Reclamation
Provo, Utah 84603

Ref. UC 814-330
Contract No. 3-CS-40-01080
Date Signed: September 8, 1983

Dear John:

Attached is my report, geologic map, and sections for the Jordanelle Reservoir. I hope it will be satisfactory for your needs.

I was glad for the opportunity to have a second look at some of the geology and to reinterpret some of the basic data.

Respectfully,

Bob L. Bridges

Bob L. Bridges
Geologist

These deposits will have little effect on reservoir storage; however, they will affect the design and construction of the proposed dam and highway.

The rocks in and adjacent to the reservoir are faulted and lightly to intensely fractured; therefore, considerable leakage will likely occur at maximum reservoir capacity. Most of the leakage will return to the Provo River downstream of the dam. Leakage is not expected to increase with time unless there is piping beneath the dam as there are no highly-soluble deposits in the area. Leakage into the mines is not expected to be extensive because of the alluvial and colluvial blanket which covers most of Drain Tunnel Creek drainage.

Wave erosion and slumping will occur on some of the steeper slopes in Drain Tunnel Creek and along the Provo River. This will have only minor effect on reservoir capacity; however, it will cause some turbidity in the water.

The potential exists for earthquake shocks in the area during the life of the project. If large seismic events occur, landslide deposits may be activated and sizable waves could be generated in the reservoir. Also, the Provo River could be blocked temporarily downstream of the damsite.

Contamination of the reservoir by mine waters or leaching of mine dumps is not expected to be a problem because of the large volume of inflow from the Provo River (average annual yield - (203,600 Ac.Ft./Yr.)). Drain Tunnel Creek is already yielding high dissolved solids and sulfate concentrations to the Provo River system.



CENTRAL UTAH PROJECT
BONNEVILLE UNIT-UTAH

SUPPLEMENT TO
DEFINITE PLAN REPORT
MAY 1988

DRAFT

PROJECT LANDS APPENDIX

REGIONAL DIRECTOR'S REPORT

CHAPTER V

TRACE ELEMENTS

Soil Sampling Studies

Trace element studies were carried out according to Reclamation Planning Instruction No. 85-09(7115) supplemented by subsequent Planning Instruction No. 86-07(7115). Under this plan, studies were initiated to assess the presence and amounts of trace elements which may be present in soils of the project area and their related effect on water quality of return flows from project lands. These sites were selected to represent an overall assessment of the project lands with the intent to furnish sufficient coverage to assure that any potential trouble areas will not be overlooked which might cause problems later when project water is applied to these lands.

The soil samples were sent to the E&R Center chemistry laboratory in Denver, Colorado, for trace element testing. The samples were prepared for analysis at Reclamation's laboratory and were then analyzed under contract to determine total arsenic, selenium, lead, mercury, and zinc.

Soil digestion and elemental analysis procedures contained in Planning Instruction No. 86-07(7115) were used by the contractor. Quality assurance procedures were followed to check the accuracy and precision of the contractor's analysis results. The results were then reviewed by Reclamation chemistry laboratory for accuracy.

A total of twenty-two sampling sites were selected with a total of 87 samples collected and analyzed. The samples were collected and sent for analysis in two different groups. The results of the analysis of soils in the Central Sevier River area are shown in Table 45. The results of the analysis for soils in the Lower Sevier River area are shown in Table 46. -

The total lead and arsenic levels of many of the soil samples appear to be relatively high. This is probably due to the nature of the soil parent materials in the area. Bearing in mind that these data are the result of total digestion procedures, these levels do not appear to be abnormally high. Because of the nature of the soils and the chemistry of the water, it is not expected that these trace elements will appear in any significant quantities in return flow waters of the area.

Return Flow Studies

Return flow waters were sampled to determine if there were any trace elements presently being leached from the project lands.

Water samples were gathered on July 8, and 10, 1987, to test for trace element constituents. Samples were gathered from existing drainage flows in operating drains and from flows in the Sevier River to monitor impact of return flows upon the river. There are several irrigation diversions on the Sevier River where the entire flow is diverted for irrigation then the return flows make up the flow of the river below these diversions.

Thirteen water sampling sites were chosen to assess trace elements in the river and drainage waters. These included six sampling sites from the Sevier River. The results of this sampling program are shown on Table 47.

The results of this sampling program showed no significant quantities of trace elements in the return flow waters tested. Due to the fact that the project lands of this area have been irrigated for over 100 years and the small amount of high quality water to be applied through the project, no increase of trace element constituents is anticipated under project conditions.



United States Department of the Interior

OFFICE OF THE SOLICITOR

INTERMOUNTAIN REGION
SUITE 6201, FEDERAL BUILDING
125 SOUTH STATE STREET
SALT LAKE CITY, UTAH 84138-1180

February 1, 1990

Memorandum

To: Regional Director, Bureau of Reclamation, Upper Colorado Region

From: Regional Solicitor, Intermountain Region

Subject: Audit of the Inspector General, Review of the Financial Management of the Colorado River Storage Project, No. W-WS-BOR-09-86

This is in response to your memorandum of February 22, 1989. From our conversations of last year we understood that this issue was in a hold position. You have now informed us that an answer is requested.

You have asked two questions:

1. Whether the Colorado River Storage Project (CRSP) authorizing legislation requires Reclamation to up-date the appropriation ceiling on an individual facility, unit or project basis and report this information in the budget documents presented to the Congress?
2. Whether the CRSP authorizing legislation prevents Reclamation from reporting to the Congress on an individual facility, unit or project basis?

DISCUSSION

The authorizing legislation referred to is the Colorado River Storage Project Act, approved April 11, 1956, Pub. L. 84-485, 70 Stat. 105, 43 U.S.C. § 620 Et seq., (1956 Act) as amended and supplemented.

The Colorado River Storage Project Act

. . . authorized the Secretary of the Interior to construct, operate, and maintain four major storage units, a power transmission and marketing system, 11 participating water use projects, and justifiable fish and wildlife and recreation programs in the Upper Colorado River Basin.

Enclosure 7

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H.R. Rep. No. 92-944, 92nd Cong. 2nd Sess., 2 (1972).¹

Section 12 of the 1956 Act provides:

There are hereby authorized to be appropriated, out of any monies in the Treasury not otherwise appropriated, such sums as may be required to carry out the purposes of this act, but not to exceed \$760,000,000.

43 U.S.C. § 620k.

Congress did not intend that the overall authorization ceiling imposed in Section 12, 43 U.S.C. § 620k, should be considered as assigning separate ceilings for each incremental part of the whole project. The intent of Congress was carefully explained in the conference report as follows:

The sum of \$760 million remains in the bill as the amount authorized to be appropriated. However, the conference committee, in retaining this amount in the bill, agreed that it should not be earmarked project wise. . . .

Our emphasis. Conf. Rep. No. 1950, 84th Cong. 2d Sess., 8 (1956).

The 1956 Act has been amended and supplemented on several occasions.

1962 Amendment

The Act of June 13, 1962, Pub. L. 87-483, 76 Stat. 96, although originally codified in Title 43, was subsequently substantially omitted therefrom. The 1962 Amendment added construction authorization for (1) the Navajo Indian Irrigation Project (N.I.I.P.), and (2) the San Juan-Chama Project. Authorization for funds to be appropriated for construction of the N.I.I.P. was granted to the Bureau of Indian Affairs in an amount not to exceed \$135,000,000, June 1961 prices. The appropriation in Section 12 of the 1956 Act was:

increased by \$85,828,000 (June 1961 prices) plus or minus such amounts, if any, as may be required by reason of changes in construction costs as indicated by engineering cost indices applicable to the types of construction involved, which increase shall be available solely for construction of the San Juan-Chama project and shall not be used for any other purpose.

¹See 1956 Act, Section 1, for the names of the units and participating projects.

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1962 Amendment, Section 10.

Each project was treated separately and each had its own construction authorization ceiling.

1964 Amendment

The Act of September 2, 1964, Pub. L. 88-568, added three projects.² The appropriation in Section 12 of the 1956 Act was:

increased by the sum of \$47,000,000 plus or minus such amounts, if any, as may be required by reason of changes in construction costs as indicated by engineering cost indexes applicable to the type of construction involved. This additional sum shall be available solely for the construction of the projects herein authorized.

1964 Amendment, Section 1.

These three projects were authorized as a group.

1968 Amendment

The Act of September 30, 1968, Pub. L. 90-537, 82 Stat. 885, Title V, Sec. 501 (a), added construction authorization for five projects in Colorado and New Mexico and provisional authorization for one in Utah.³ Section 12 of the 1956 Act was amended and "further increased by the sum of \$392,000,000" with the same statement on indexing as contained in the 1962 Amendment. The increased authorization "shall be available solely for the construction" of the five projects authorized therein. 1968 Amendment, Section 501 (a).

The increased authorization was for construction of the five projects as a group.

²-----
Savory Pot Hook, Bostwick Park, and Fruitland Mesa.

³Animas-La Plata Federal Reclamation Project, Colorado-New Mexico; the Dolores, Dallas Creek, West Divide, and San Miguel Federal Reclamation Projects, Colorado; and the Central Utah Project (Uintah Unit), Utah. The proviso for the Uintah Unit authorization directed that the Secretary not construct the unit "until he has completed a feasibility report" which demonstrates that the "benefits of such unit or segment will exceed the costs and that such unit is physically and financially feasible, and the Congress has authorized the appropriation of funds for the construction thereof." This proviso was deleted by the Act of October 19, 1980, Pub. L. 96-470. See 43 U.S.C. § 620 and the following Historical Note.

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1972 Amendment

The Act of August 10, 1972, Pub. L. 92-370, 86 Stat. 525, 42 U.S.C. § 620k amended Section 12 of the 1956 Act and added thereto the sum of \$610,000,000 "solely for continuing construction of the previously authorized units and projects named herein."⁴ The amendment contains the identical language of the 1964 amendment as regards cost indexing.

Congress again stated its intent that the total funds appropriated should not be earmarked project wise.

The funds are authorized in a lump sum and need not be appropriated precisely in accordance with the current estimates of their disposition.

Our emphasis, H.R. No. 92-944, 92nd Cong. 2d Sess., 2 (1972)

1988 Amendment

The Act of October 31, 1988, Pub. L. 100-563, increased the construction authorization of Section 12 of the 1956 Act in the amount of \$45,456,000 "solely for continuing construction of the previously authorized units and projects named" in the Act of August 10, 1972, *supra*. This act contains the identical indexing authorization as appears in the 1964 amendment.

RECLAMATION POLICY

You have informed us that the Bureau of Reclamation has in its budget reports to the Congress consistently followed the authorizations as aforesaid. The Navajo Irrigation Project was authorized individually and has been reported individually. The San Juan-Chama Project was authorized individually and has been individually reported to the Congress. The projects authorized in the 1956 Act have been reported as a group. In a similar manner the projects authorized in the 1964 amendment, and the 1968 amendment have been reported as groups in accordance with their authorization.

The 1972 amendment and the 1988 amendment each refer to completion of theretofore authorized projects. Each expenditure under these two amendments has likewise been by the entire group as listed in the authorizing legislation.

⁴Curecanti, Flaming Gorge, Glen Canyon, Navajo units, and Transmission Division of the Colorado River Storage Project, Central Utah (initial phase-Bonneville, Jensen, Upalco, and Vernal units), Emery County, Florida, Hammond, LeBarge, Lyman, Paonia, Seedskadee, Silt, and Smith Fork.

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ANSWER

To Question 1:

The answer to the first question is that the authorizing legislation does not require Reclamation to up-date the appropriations ceiling on an individual facility, unit or project basis and report this information to the Congress in its budget documents.

To Question 2:

The answer to the second question is that although reporting on an individual facility, unit or project basis may not be expressly forbidden, if such reporting implies authorization on an individual facility, unit or project basis it is contrary to the intent of the Congress which directed that the "amount authorized to be appropriated . . . should not be earmarked project wise." (Our emphasis). Conf. Rep. No. 1950, supra.


LYNN R. COLLINS
Regional Solicitor

cc: Associate Solicitor, Energy and Resources

WHD:md GLEF:mdlls

July 31, 1990
Revised September 21, 1990

COLORADO RIVER STORAGE PROJECT
PARTICIPATING UNITS

PUBLIC LAW	UNIT/PROJECT	Original Cost Estimate	Indexed Cost Oct. 1990	General Legislation Cost Estimate	Appropriated Through FY 1990	Total Amount	
						Currently Estimated for Completion	4/ Active Completed Inactive
84-485							
90-370	COLORADO RIVER STORAGE 1/						
	WAYNE N. ASPINALL	142,049,000	214,772,412	206,000	167,176,767	168,068,158	A
	FLAMING GORGE	68,173,000	72,053,571	0	80,901,520	80,933,950	C
	GLEN CANYON	276,898,000	328,720,817	0	254,895,890	254,895,890	C
	NAVAJO	40,453,000	43,235,236	0	44,330,596	44,330,596	C
	TRANSMISSION	219,553,000	130,601,000	0	130,599,127	130,599,127	C
	O AND M	3,578,000	3,578,000	0	3,577,680	3,577,680	C
	QUALITY OF WATER	499,000	499,000	0	498,926	498,926	C
	BONNEVILLE	445,576,000	1,034,908,840	39,551,000	1,084,023,073	1,888,497,372	A
	JENSEN	11,381,000	22,497,543	548,000	62,476,378	72,220,256	A
	UPALCO	23,052,000	60,539,316	805,000	11,447,514	103,854,000	I
	VERNAL	9,792,000	11,392,237	28,000	10,401,297	10,401,297	C
	EMERY COUNTY	15,564,000	19,055,686	2,000	16,294,510	16,294,510	C
	FLORIDA	11,205,000	11,268,032	0	11,263,438	11,263,438	C
	HAMMOND	7,103,000	8,771,216	0	7,262,257	7,262,257	C
	LA BARGE	136,000	136,000	0	136,279	136,279	C
	LYMAN	15,355,000	15,362,798	59,000	34,802,365	35,892,439	I
	PAONIA	6,092,000	6,129,904	0	6,166,878	6,166,878	C
	PINE RIVER EXTENSION	136,000	136,000	0	136,496	136,496	C
	SEEDSKADEE	60,332,000	121,937,295	0	33,927,994	41,711,807	A
	SILT	7,726,000	8,541,785	0	7,393,669	7,393,669	C
	SMITH FORK	4,515,000	4,588,043	0	4,568,980	4,568,980	C
	STRAWBERRY VALLEY	0	18,000,000	0	15,600,000	18,000,000	A
	NATIONAL FISH HATCHERIES	0	9,075,271	0	7,128,894	16,544,000	I
	MODIFICATIONS AND ADDITIONS	0	-2,306,000	0	14,633,529	14,810,913	C
	ROUNDING/ADJUSTMENTS	832,000	-2,091,002	0	0	0	
	TOTAL	1,370,000,000	2,141,403,000	41,199,000	2,009,644,057	2,938,058,918	

Page 1

Enclosure 8

PUBLIC LAW	UNIT/PROJECT	Original Cost Estimate	Indexed Cost Oct. 1990	General Legislation Cost Estimate	Appropriated Through FY 1990	Total Amount Currently Estimated for Completion	3/ Active Completed Inactive
88-568	BOSTWICK PARK	4,082,000	4,158,000	0	10,114,402	10,114,402	C
	FRUITLAND MESA	27,336,000	106,194,000	0	2,947,781	155,785,055	I
	SAVERY-POT HOOK	15,582,000	59,408,000	0	2,106,012	134,406,593	I
	TOTAL	47,000,000	169,760,000	0	15,168,195	300,306,050	
84-485							
87-483	SAN JUAN-CHAMA	85,828,000	158,548,000	1,260,000	77,742,232	119,525,843	I
	TOTAL	85,828,000	158,548,000	1,260,000	77,742,232	119,525,843	
87-483							
91-416	NAVAJO INDIAN IRRIGATION	206,000,000	517,365,000	8,677,000	263,897,671	559,615,000	A
	TOTAL	206,000,000	517,365,000	8,677,000	263,897,671	559,615,000	
90-537	ANIMAS-LA PLATA	115,880,000	403,078,000	19,822,000	9,796,205	352,033,500	A
	DALLAS CREEK	42,310,000	130,633,000	3,383,000	146,657,133	166,864,000	A
	DOLORES	53,850,000	151,526,000	20,239,000	368,004,618	460,513,351	A
	SAN MIGUEL	73,140,000	254,006,000	202,000	2,640,576	125,430,000	I
	WEST DIVIDE	106,580,000	382,281,000	168,000	1,754,640	260,671,000	I
	ADJUSTMENTS	240,000	836,000	0	0	0	
	ENDANGERED SPECIES	0	0	0	1,000,000	10,000,000	A
	TOTAL	392,000,000	1,322,360,000	43,814,000	529,853,172	1,375,511,851	
94-423	UINTAH UNIT, CENTRAL UTAH	90,247,000	192,414,000	0	5,821,501	201,993,000	I
	TOTAL	90,247,000	192,414,000	0	5,821,501	201,993,000	

- 1/ The authorized appropriation ceiling, indexed to October 1990 price levels plus the estimated cost for general legislation, is \$2,229,177,000, which includes affect of P.L. 100-563 (\$46,575,000).
- 2/ The decrease from the original cost estimate to the Oct. 1990 indexed cost is due to the creation of WAPA (Public Law 95-91) which has responsibility for construction of transmission facilities.
- 3/ Authorized by Public Laws 100-563 and 101-101.
- 4/ For appropriation ceiling computations deferred projects would be treated identical to inactive projects. In accordance with ratesetting procedures Fruitland Mesa, San Miguel, Savery-Pot Hook, West Divide, LaBarge, Upalco and Uintah are considered as deferred. The Irrigation and Drainage System of the Bonneville Unit is also considered as deferred.

PREPARED STATEMENT OF AMERICAN PUBLIC POWER ASSOCIATION

The American Public Power Association and its members have a strong interest in the legislation before you today. S. 2969 is a hybrid bill, addressing irrigation, municipal and industrial water supply, Indian water rights, and environmental concerns. APPA urges your careful scrutiny of this legislation to ensure that its objectives are pursued in a manner that does not inequitably burden federal power customers or violate the traditional terms under which federal power customers have willingly participated in the construction of federal multipurpose water projects.

APPA is the national service organization representing more than 1,750 locally controlled public power systems. Approximately 500 public power systems—in addition to more than 600 rural electric cooperatives—meet all or a portion of their bulk power needs through the purchase of power generated at federal hydroelectric projects.

These consumer-owned utilities entered a contract with the federal government whereby they agreed to repay—in full and with interest—the federal investment in these power facilities. In the case of those projects located in the 17 western Reclamation states, federal power customers agreed to assist in the repayment of irrigation facilities associated with these multipurpose water projects. Colorado River Storage Project (CRSP) power customers will repay 95 percent of the capital costs of all associated CRSP irrigation works and 98 percent of the capital costs of the Central Utah Project (CUP) irrigation and drainage features.

Throughout the past several years' debate over the Central Utah Project, APPA has maintained its support for completion of that project. However, that support, which is grounded on a long-standing partnership between western water and power interests, has not been unconditional. As outlined in the attached policy resolution adopted by the APPA membership, the support and repayment assistance of federal power customers for any proposal to complete the CUP depends on the conformance of that proposal with traditional reclamation policies.

Previous proposals to authorize an increase in the CRSP authorization ceiling—which is necessary to complete the irrigation and drainage features of CUP—included provisions that would have violated traditional repayment policies, imposed substantial and inequitable financial obligations on CRSP power customers, and incurred the opposition of APPA.

APPA is pleased that the proposal before you today does not contain these provisions. Moreover, APPA appreciates the efforts of the Utah congressional delegation to adhere to traditional irrigation assistance repayment policies for the financing of this project.

Public power values its historic partnership with western water interests that made possible the CRSP and other multipurpose water projects. However, APPA will not sanction, nor accept, detrimental or unilateral changes to the terms of that partnership. We urge you, therefore, to resist all such efforts.

While the funding mechanism for the fish and wildlife commission contained in the legislation does not violate traditional repayment policies and the irrigation assistance provisions are also intended to be consistent with these policies, APPA would like to draw the Committee's attention to several items of potential concern related to this matter.

REPAYMENT OF SUNK COSTS

Under traditional reclamation policies, irrigators begin repaying project costs after the conclusion of the development period following the first delivery of water. Federal power customers assume repayment responsibility for the cost of these irrigation projects that are "beyond the irrigators' ability to pay" and repay this "irrigation assistance" within the same time period, and under the same terms, as the irrigators.

APPA presumes that it is the intent of the authors of this legislation to adhere to these policies; however, the ambiguity of Section 105(c) of the bill could be interpreted as accelerating this process and starting the repayment time clock for irrigation assistance before the project is even complete. Requiring the initiation of repayment for a project that is not complete would be inequitable and inconsistent with traditional reclamation repayment policies. We urge the Committee to review this provision and resolve any unintended ambiguity.

COST REALLOCATION

Section 111 of the legislation provides for an audit and, if necessary, reallocation of project costs after the completion of the project. APPA supports such a review;

however, we urge the Committee to clarify that in any resulting reallocation the assignment of costs must parallel the allocation of project benefits.

As the Committee knows, it is possible that water originally dedicated for irrigation use could be reallocated for municipal and industrial water supply or other beneficial uses (such as instream flows). If such reallocation were to occur, equity demands that the associated project costs be similarly transferred.

This provision would be improved by clarifying that both the audit and any subsequent reallocation are intended to insure this nexus between project costs and benefits.

REPAYMENT OF WATER CONSERVATION PROGRAMS

Under Section 107(e), the cost of irrigation water conservation measures would be repaid predominantly by federal power customers. This assignment of cost is inappropriate. Section 107(b)(4) of the legislation allows project irrigators to market the conserved water. Thus, federal power customers could subsidize the delivery of water to irrigators who in turn market the water for a profit. Such action seems illogical on its face and should be corrected.

CONCLUSION

APPA appreciates the efforts of the Utah delegation to address the concerns of power customers during this process, and we look forward to continuing to work with the delegation and the Committee to address these final concerns.

CENTRAL UTAH PROJECT

WHEREAS, the Central Utah Project (CUP) is a participating project of the Colorado River Storage Project (CRSP), a multipurpose water project, authorized by the Act of April 11, 1956, that provides affordable, reliable hydropower to 155 CRSP firm power customers in six states, and

WHEREAS, an increase in the CRSP authorized appropriation ceiling is needed to complete construction of the CUP irrigation and drainage features, and

WHEREAS, over the last three years various legislative proposals to complete CUP have contained provisions unacceptable to federal power customers, including:

Departure from the preference principle and traditional repayment policies for sale of federal hydropower;

Surcharging federal power customers to fund fish and wildlife programs including programs unrelated to the operation of power facilities—and with such programs implemented by an unaccountable state or regional commission; and

Efforts to alter the statutory and operating objectives of CRSP, and

WHEREAS, the American Public Power Association and CRSP power customers are advised that the Utah congressional delegation has developed a consensus proposal dated November 17, 1989 for completion of CUP that does not contain the objectionable provisions present in earlier proposals, and

WHEREAS, the Utah delegation proposal includes a provision intended to earmark \$5 million of the funds repaid by Utah firm CRSP customers to assist, after being credited to project repayment, in funding various fish and wildlife mitigation and enhancement activities in the State of Utah, and

WHEREAS, this provision, with technical corrections, would allow for the full crediting of this payment to the total CRSP repayment obligations, would not raise CRSP rates or increase CRSP repayment obligations, and would be accomplished in a manner consistent with traditional repayment policies, and

WHEREAS, currently CRSP firm power customers are facing considerable uncertainty about the price and availability of CRSP firm power due to the Glen Canyon Dam Environmental Impact Statement, the Environmental Impact Statement on the post-1989 CRSP marketing plan, the Upper Basin endangered species restoration plan, and associated issues, and

WHEREAS, the APPA Task Force on Federal Water and Power Policies recommended opposition to those proposals to construct irrigation projects that deviate from traditional repayment policies without providing federal power customers with offsetting benefits;

NOW, THEREFORE, BE IT RESOLVED: that the American Public Power Association continues to support an increase in the CRSP authorized ceiling needed for completion of the Central Utah Project, provided that such action is accomplished with full adherence to traditional federal power repayment policies, and

BE IT FURTHER RESOLVED: that the American Public Power Association finds that, if the Utah congressional delegation's proposed provision to fund CUP related fish and wildlife programs is modified to clearly require full crediting of power revenue toward CRSP repayment obligations before using those revenues to assist in funding mitigation and wildlife activities and such use does not raise CRSP power rates or increase the CRSP repayment obligation for this purpose, then the November 17 draft legislation will be, in principle, consistent with traditional repayment policies, and

BE IT FURTHER RESOLVED: that American Public Power Association will oppose the inclusion of any provision in CUP legislation that adversely affects federal power customers or violates traditional repayment policies, and, if such changes are adopted, will oppose completion of the Central Utah Project.

Adopted June 1990, by the Membership of the American Public Power Association.

